



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.  
ATLANTA, GEORGIA 30365

202

4WD-RCRA

MAY 31 1989

Ms. Elizabeth Dixon  
Champion International Corporation  
Canton Mill  
P.O. Box C-10  
Canton, NC 28716

Re: Receipt of Certification/Demonstration Submitted Pursuant  
to 40 CFR 268.8, EPA ID No. NCD 003 148 889

Dear Ms. Dixon:

This letter is to acknowledge the receipt by the Environmental Protection Agency on February 23, 1989, of the Certification/Demonstration submitted pursuant to 40 CFR 268.8 for the U012, U031, U108, U134, and U188 wastes generated by Champion International Corporation.

Certification and Demonstration as outlined in 40 CFR 268.8 is self-implementing. Section 268.8 (e) states:

Once the certification is received by the EPA, and provided that the wastes have been treated by the treatment (if any), determined by the generator to yield the greatest environmental benefit practically available, the wastes may be disposed in a landfill or surface impoundment unit meeting the requirements of 40 CFR 268.5 (h)(2), unless otherwise prohibited by the EPA.

In the event that the decision is to invalidate a Certification/Demonstration, the generator will be notified. Upon receipt of the Notice of Invalidation, the disposal of the "soft hammer" wastes in a surface impoundment or landfill must cease.

If you have any questions, please contact Mr. Glenn May of my staff at (404)347-7603.

Sincerely yours,

John C. Lank, Jr., P.E.  
Chief, East Unit  
Waste Compliance Section

cc: Jerry Rhodes, NC Hazardous Waste Branch, State Program  
Director  
D. Keith Masters, NC Hazardous Waste Branch, Western  
Region

bcc: Mr. Glenn May





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET  
ATLANTA, GEORGIA 30365

202

JUN 20 1989

4WD-RCRA

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Ms. Elizabeth Dixon  
Champion International Corporation  
Canton Mill  
P.O. Box C-10  
Canton, NC 28716

Re: Notice of Invalid Certification/Demonstration Submitted  
Pursuant to 40 CFR 268.8 - Correspondence dated February 23,  
1989 - EPA I.D. No. NCD 003 148 889

Dear Ms. Dixon:

After reviewing the documentation submitted by Champion International Corporation, pursuant to 40 CFR 268.8 for "soft hammer" waste code U103, the Director of the Waste Management Division has decided to invalidate the certification.

In the event that the decision is to invalidate the certification/demonstration, the disposal of the "soft hammer" wastes in a surface impoundment or landfill must cease. 40 CFR 268.8 (b)(2) states:

If, after review of the certification, it is determined that practically available treatment exists where the generator has certified otherwise, or that there exists some other method of practically available treatment yielding greater environmental benefit than that which the generator has certified, the EPA may invalidate the certification.

Champion International Corporation has failed to submit the information required by 40 CFR 268.8 that is essential to the determination of the validity of the certification. Specifically, the Certification/Demonstration was deemed deficient for the following reasons:

1. Information supporting the dismissal of any treatment technology must be included in the demonstration.



2. For cost based arguments, the generator must be able to verify in the demonstration that cost is a factor in making the decision to landfill the hazardous waste. The generator must supply cost information pertaining to the cost disposal, cost of alternative treatment, costs associated with transporting the waste to a landfill and a treatment facility.

Sufficient information must be supplied to support your demonstration that a treatment technology should be dismissed from further consideration. The generator must justify that the best treatment that is practically available has been chosen. In making the demonstration, the generator must consider all available practical technologies when proposing to the Agency that the certification is a valid and responsible analysis of the technologies available.

Champion International Corporation has the right to resubmit a certification and demonstration pursuant to 40 CFR 268.8, which addresses the deficiencies noted above. Effective on the date of the receipt of this letter, the "soft hammer" wastes that are subject to 40 CFR 268.8 are prohibited from shipping, manifesting, disposal in a surface impoundment or landfill until such resubmitted Certification/Demonstration is received by the Director of the Waste Management Division. Champion International Corporation must notify those facilities that have received "soft hammer" wastes from Champion International Corporation that the Certification/Demonstration previously submitted has been invalidated.

Enclosed is a copy of 40 CFR 268.8, entitled "Landfill and Surface Impoundment Disposal Restriction," which includes the correct wording for the certifications for "soft hammer" wastes. Section 268.8 is part of the Final Rule: "Land Disposal Restrictions for First Third Scheduled Wastes," which was published in the Federal Register, Vol. 53, No. 159, August 17, 1988, 31138-31222.

If you have any questions, please contact Mr. Glenn May of my staff at 404/347-7603.

Sincerely yours,

Patrick M. Tobin, Director  
Waste Management Division

Enclosure

cc: Jerry Rhodes, NC Hazardous Waste Branch, State Program  
Director  
D. Keith Masters, NC Hazardous Waste Branch, North Central  
Region  
Bcc: Mr. Glenn May





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.  
ATLANTA, GEORGIA 30365

APR 15 1991

4WD-RCRAFFB

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Champion International Corp.  
Canton Mill  
Not in a city, NC 28716

RE: Notification of the New Boiler/Industrial Furnace Regulation

Dear Sir/Madam:

On February 21, 1991, the U.S. Environmental Protection Agency (EPA) published new regulations under the Resource Conservation and Recovery Act (RCRA) pertaining to the burning of hazardous waste in certain boilers and industrial furnaces (BIFs). This activity was previously exempt from RCRA regulation. The purpose of this correspondence is to inform owners/operators that by May 22, 1991, an EPA Form 8700-12, "Notification of Regulated Waste Activity," must be submitted to EPA's Region IV office in Atlanta, Georgia. A copy of this form is enclosed for your convenience. Renotification is not required if a facility previously notified the Agency of hazardous waste fuel activity under 40 CFR §266.35.

The enclosed Summary Fact Sheet was prepared to assist the potentially regulated community in determining if the new regulations are applicable to their operation. This determination of applicability is to be made by the owner/operator of the potentially affected facility, not by EPA. The fact that you have received this letter does not necessarily mean you are subject to notification requirements.

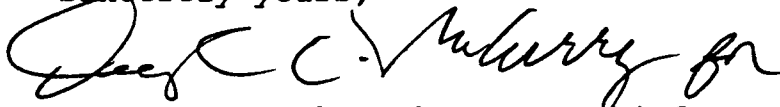
The new regulation contains critical dates and time frames for completion of certain requirements for newly regulated, interim status and permitted facilities. We strongly recommend that you obtain a copy of the rule and preamble (56 Federal Register pp. 7134-7240, February 21, 1991), and carefully review it in its entirety to determine exactly what parts, if any, apply to you. A copy of the rule and preamble is available through EPA's RCRA Hotline in Washington, D.C., at (800) 424-9346 (toll free).



If you determine that the new rule does not apply to you, we would greatly appreciate it if you would pass this information along to any other facility owner/operator(s) you know of that may be subject.

If you have questions regarding this information, please contact Ms. Beth Antley, Regional Hazardous Waste Combustion Expert, in EPA's Region IV office in Atlanta at 404/347-3433, or the RCRA Hotline.

Sincerely yours,

A handwritten signature in black ink, appearing to read "James H. Scarbrough", written over the typed name.

James H. Scarbrough, P.E., Chief  
RCRA and Federal Facilities Branch  
Waste Management Division

Enclosures: Summary Fact Sheet  
EPA Form 8700-12





December 20, 1994

Mr. Mike Hom  
Unit Chief - NCFL Unit  
Water Management Division  
EPA Region IV  
345 Courtland Street, N.E.  
Atlanta, GA 30365

Dear Mr. Hom:

By letter of June 22, 1994, I furnished Mr. Ron Phelps with a written follow-up to my June 15 telephone conversation with him regarding the detection of a small seep into the Pigeon River in the vicinity of Champion International Corporation's Canton Mill. I understand Mr. Phelps is no longer in this section, so I am sending you this information to update you on the progress of our investigation into this matter.

Champion has undertaken an aggressive program to identify possible sources of the reported seep and of several other small seeps subsequently detected. As expected, following notification to the State of North Carolina, Champion has been working closely with the Division of Environmental Management (DEM), Groundwater Section. The DEM issued a notice of violation (Attachment I) for exceeding groundwater standards dated September 1, 1994, under which Champion has submitted a proposed Comprehensive Site Assessment ("CSA") program which will in turn lead to preparation of a Corrective Action Plan. On Friday, December 16, 1994, Champion met with DEM personnel in the Asheville Regional office and submitted the attached CSA (Attachment II). In addition, Champion initiated immediate response activities in the nature of Interim Response Measures ("IRMs"), including both collection of potentially contaminated groundwater in the vicinity of the seep and source control measures. That work is continuing.

As reported to Mr. Phelps on June 15, at the time of the initial detection of the small seep into the River the available data indicated that the seep was non-hazardous by reference to applicable regulatory standards. Subsequently,



Champion initiated a surface water monitoring program at this and other locations along the river bank and engaged a certified outside laboratory to perform analysis on these additional samples. (A map denoting the location of the referenced well is included in Attachment II, Figure 3.) A recovery well installed approximately 50 feet upgradient of the first seep as an IRM also has been sampled and analyzed. (All of the resulting data are in Attachment III.) The data verifies the non-hazardous characteristic of the groundwater seeps, with two isolated exceptions which nominally exceed 12.5 pH. The data collected to date is insufficient to establish the frequency or volume of any corrosive groundwater releases. While Champion does not believe that reportable quantities of corrosive groundwater have been or are being released, Champion likely will not be in a position to resolve this issue conclusively until the CSA plan is implemented. There are no observed adverse effects on the Pigeon River based on visual observations and pH monitoring (Attachment II, Table 3).

As part of the CSA, Champion plans to install a number of groundwater monitoring wells; to conduct a comprehensive water quality assessment of the potentially affected area; to implement, as necessary, source control and/or removal measures and to recover and, as necessary, treat contaminated groundwater. A proposed multi-well recovery well system is also being planned. All of this work will, of course, be undertaken with the direction and approval of the DEM.

If you require any further information regarding this matter, please feel free to contact me (704) 646-2318 or Kay Dechant, Environmental Engineer, (704) 251-6208, who has been identified as the DEM's contact person for the State.

Sincerely,



Derric Brown  
Environmental Supervisor

DB/jab

Attachments



**ATTACHMENT I**

**NOTICE OF VIOLATION**



State of North Carolina  
Department of Environment,  
Health and Natural Resources  
Division of Environmental Management



James B. Hunt, Jr., Governor  
Jonathan B. Howes, Secretary  
Nann B. Guthrie, Regional Manager  
Asheville Regional Office

SEP 07 1994  
*RVN*

September 1, 1994

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

P 290 059 986

Mr. Bob Williams  
Champion International Corporation  
Canton Mill  
Box C-10  
Canton, North Carolina 28716

SUBJECT: Notice of Violation for the Groundwater Classifications and Standards, Title 15A, N.C. Administrative Code, Subchapter 2L. Champion International Corporation  
Pigeon River Seep  
Haywood County, North Carolina

Dear Mr. Williams:

Based upon the analytical data from samples collected from the groundwater discharge seep near the Pigeon River, the Division of Environmental Management (Division) has reason to believe that you are responsible for activities resulting in violations of North Carolina law. This letter is a standard notification to such a violation under North Carolina law.

Chapter 143, North Carolina General Statutes, authorizes and directs the Environmental Management Commission and the North Carolina Department of Environment, Health, and Natural Resources (DEHNR) to protect and preserve the water and air resources of the State. The Division has the delegated authority to enforce adopted pollution control rules and regulations.

The presence of 0.012 mg/l of cadmium, 0.030 mg/l of lead, 0.059 mg/l of chromium, 2.837 mg/l of iron, 0.068 mg/l of manganese, and 56.9 ug/l of naphthalene establishes a violation of NCAC Title 15A, Subchapter 2L, Classifications and Water Quality Standards Applicable to the Groundwaters of North Carolina.

Within two weeks of the receipt of this notice, you are to submit to this office a written response describing your intentions for performing a comprehensive site assessment (CSA) and corrective action plan (CAP) to be submitted to this office by March 15, 1995.



Mr. Bob Williams  
September 1, 1994  
Page 2

SEP 1 1994

SEP 1 1994

*pva*

Upon any violations of established deadlines, no further notice may be sent and this office may immediately request that enforcement measures be commenced. Therefore, it is important that all deadlines be met, or an extension of time be requested for good cause. Failure to respond within the times specified may result in the recommendation for one or both of the following enforcement actions:

1. Assessment of a civil penalty assessment under authority of G.S. 143-215.6A of not more than \$10,000 per day if any action or failure to act is continuous; issuance of a special order against you under the authority of G.S. 143-215.2; or a request to the Attorney General to institute an action for injunctive relief for violations of the North Carolina Groundwater Standards;
2. Criminal action, including penalty assessments may be commenced against any person who knowingly and willfully violates any groundwater standard or cleanup requirement.

Your response should be directed to Kay Dechant at the following address: NC DEHNR, DEM, Groundwater Section, 59 Woodfin Place, Asheville, North Carolina 28801. If you have any questions, please feel free to call Ms. Dechant at (704) 251-6208.

Sincerely,

*Roy M. Davis*

Roy M. Davis  
Regional Supervisor

RMD/LKD/gc

cc: Arthur Mouberry  
Burrie Boshoff  
Haywood County Health Department



**ATTACHMENT II**

**GROUNDWATER ASSESSMENT PLAN  
AT THE CANTON PULP AND PAPER MILL**



**ATTACHMENT III**

**RECOVERY WELL CHARACTERIZATION DATA**



H Y D R O L O G I C , I N C .

FINAL REPORT OF ANALYSES

CHAMPION INTERNATIONAL  
PO BOX C-10  
MAIN STREET  
CANTON, NC 28716-  
Attn: JIM GIAUQUE

PROJECT NAME: CHAMPION  
REPORT DATE: 09/30/94

SAMPLE NUMBER- 50212 SAMPLE ID- RWI 9040  
DATE SAMPLED- 09/23/94  
DATE RECEIVED- 09/23/94 SAMPLER- EDWARD  
TIME RECEIVED- 1300 DELIVERED BY- EJM

SAMPLE MATRIX- WW  
TIME SAMPLED- 0941  
RECEIVED BY- PLB

Page 1 of 1

ANALYSIS	METHOD	SAMPLE PREP DATE	ANALYSIS BY DATE	BY	RESULT UNITS	DET. LIMIT
PH, LAB	EPA 150.1		09/28/94	MGN	12.5 std units	
TOX. CHAR. LEACHING PROCEDURE	6010	09/25/94	LJP	09/28/94	LJP	
ARSENIC, TOTAL	6010				< 0.050 mg/l	0.050
CADMIUM, TOTAL	6010				< 0.050 mg/l	0.050
CHROMIUM, TOTAL	6010				0.065 mg/l	0.050
MERCURY, TOTAL	6010				< 0.0002 mg/l	0.0002
SELENIUM, TOTAL	6010				< 0.050 mg/l	0.050
SILVER, TOTAL	6010				< 0.050 mg/l	0.050
BARIUM, TOTAL	6010				0.082 mg/l	0.050
LEAD, TOTAL	6010				< 0.050 mg/l	0.050

LABORATORY DIRECTOR



H Y D R O L O G I C , I N C

2C REPORT FOR CHAMPION INTERNATIONAL 09/30/94

QA/QC for SAMPLE Nos: 50212,

Page 1

Analyte	LAB ID	Precision Data				Accuracy Data	Reference Sample Data			
		Replicate A	Replicate B	Range	RPD %	% Spike Recovery	Reference Sample ID	Target	Found	% Recovery
PH, LAB EPA 150.1 Std units	50212	12.524	12.413	0.11	0.89	-----	APG 11958	3.63	3.54	97.50
	50212	-----	-----	-----	-----	-----	H1 BUFFER	12.45	12.51	100.50
ARSENIC, TOTAL 6010 mg/l	50212	< 0.050	< 0.050	0.025	0.00	87.50	-----	-----	-----	-----
	50212	-----	-----	-----	-----	90.50	-----	-----	-----	-----
CADMIUM, TOTAL 6010 mg/l	50212	< 0.050	< 0.050	0.025	0.00	77.00	-----	-----	-----	-----
	50212	-----	-----	-----	-----	77.00	-----	-----	-----	-----
CHROMIUM, TOTAL 6010 mg/l	50212	0.062	0.068	0.0060	9.23	106.30	-----	-----	-----	-----
	50212	-----	-----	-----	-----	106.90	-----	-----	-----	-----
MERCURY, TOTAL 6010 mg/l	NO DUPLICATE, SPIKE, OR REFERENCE SAMPLES FOR THIS ANALYSIS									
SELENIUM, TOTAL 6010 mg/l	50212	< 0.050	< 0.050	0.025	0.00	-----	-----	-----	-----	-----
SILVER, TOTAL 6010 mg/l	50212	< 0.050	< 0.050	0.025	0.00	83.60	-----	-----	-----	-----
	50212	-----	-----	-----	-----	84.40	-----	-----	-----	-----



[illegible]



# H Y D R O L O G I C , I N C .

October 5, 1994

**REPORTING:**

Hydrologic-Asheville, Inc  
122 Lyman Street  
Asheville, NC 28801

Attention: Melissa Shook

**INVOICING:**

Hydrologic-Asheville, Inc  
122 Lyman Street  
Asheville, NC 28801

**PROJECT NUMBER:** FL9431003

**DATE COMPLETED:** October 5, 1994

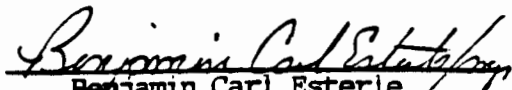
**DATE RECEIVED:** September 27, 1994

**PROJECT DESCRIPTION:**

Champion—1 water sample for TCLP 8240/TCLP 8270, sampled on 09/23/94.

Enclosed is the laboratory report for the project described above. If you have any questions or if we can be of further assistance, please feel free to contact Jamie Fore. We appreciate your business and look forward to serving you again soon.

Respectfully,

  
Benjamin Carl Esterle  
Laboratory Director



# H Y D R O L O G I C , I N C

COMPANY NAME: Hydrologic-Asheville, Inc  
 COMPANY PROJECT NUMBER: CHAMPION  
  
 HYDROLOGIC PROJECT NUMBER: FL9431003  
 HYDROLOGIC SAMPLE NUMBER: 31003  
 HYDROLOGIC LAB I.D.#: 399  
 SAMPLE IDENTIFICATION: RW 1  
 DATE SAMPLED: 9/23/94  
 DATE EXTRACTED: 9/27/94  
 DATE/TIME ANALYZED: 9/28/94

## METHOD TCLP 8240

<u>ANALYSIS</u>	<u>CAS NO.</u>	<u>SDL</u> ( mg/l )	<u>RESULT</u> ( mg/l )
Benzene	71-43-2	0.001	0.004
Carbon Tetrachloride	56-23-5	0.001	BDL
Chlorobenzene	108-90-7	0.001	BDL
Chloroform	67-66-3	0.001	BDL
1,4-Dichlorobenzene	106-46-7	0.001	BDL
1,2-Dichloroethane	107-06-2	0.001	BDL
1,1-Dichloroethene	75-35-4	0.001	BDL
2-Butanone	78-93-3	0.100	BDL
Tetrachloroethene	127-18-4	0.001	BDL
Trichloroethene	79-01-6	0.001	BDL
Vinyl Chloride	75-01-4	0.005	BDL
Surrogate Recoveries:			
1,2-Dichloroethane-D4			104%
Toluene-D8			96%
Bromofluorobenzene			112%

BDL = Below Sample Detection Limit  
 SDL = Sample Detection Limit

COMMENTS: \_\_\_\_\_



# H Y D R O L O G I C , I N C .

COMPANY NAME: Hydrologic-Asheville, Inc  
 COMPANY PROJECT NUMBER: CHAMPION  
  
 HYDROLOGIC PROJECT NUMBER: FL9431003  
 HYDROLOGIC SAMPLE NUMBER: VEK1003  
 HYDROLOGIC LAB I.D.#: 399  
 SAMPLE IDENTIFICATION: BLANK  
 DATE SAMPLED: N/A  
 DATE EXTRACTED: N/A  
 DATE/TIME ANALYZED: 9/28/94

## METHOD Blank 8240

<u>ANALYSIS</u>	<u>CAS NO.</u>	<u>SDL</u> ( mg/l )	<u>RESULT</u> ( mg/l )
Acetone	67-64-1	0.1	BDL
Acrolein	107-02-8	0.050	BDL
Acrylonitrile	107-13-1	0.050	BDL
Benzene	71-43-2	0.005	BDL
Bromodichloromethane	75-27-4	0.005	BDL
Bromoform	75-25-2	0.005	BDL
Bromomethane	74-83-9	0.01	BDL
2-Butanone	78-93-3	0.100	BDL
Carbon Disulfide	75-15-0	0.005	BDL
Carbon Tetrachloride	56-23-5	0.005	BDL
Chlorobenzene	108-90-7	0.005	BDL
Chloroethane	75-00-3	0.01	BDL
2-Chloro Ethyl Vinyl Ether	110-75-8	0.01	BDL
Chloroform	67-66-3	0.005	BDL
Chloromethane	74-87-3	0.01	BDL
Dibromochloromethane	124-48-1	0.005	BDL
Dibromomethane	74-95-3	0.005	BDL
1,4-Dichloro-2-Butane		0.005	BDL
Dichlorodifluoromethane	75-71-8	0.01	BDL
1,2-Dichlorobenzene	95-50-1	0.005	BDL
1,3-Dichlorobenzene	541-73-1	0.005	BDL
1,4-Dichlorobenzene	106-46-7	0.005	BDL
1,1-Dichloroethane	75-34-3	0.005	BDL
1,2-Dichloroethane	107-06-2	0.005	BDL
1,1-Dichloroethene	75-35-4	0.005	BDL



# H Y D R O L O G I C , I N C .

Page 2 continued

COMPANY NAME: Hydrologic-Asheville, Inc  
 COMPANY PROJECT NUMBER: CHAMPION  
 HYDROLOGIC PROJECT NUMBER: FL9431003  
 HYDROLOGIC SAMPLE NUMBER: VEK1003  
 SAMPLE IDENTIFICATION: BLANK  
 DATE SAMPLED: N/A

## METHOD Blank 8240

ANALYSIS	CAS NO.	SDL ( mg/l)	RESULT ( mg/l)
trans-1,2-Dichloroethene	156-60-5	0.005	BDL
1,2-Dichloropropane	78-87-5	0.005	BDL
cis-1,3-Dichloropropene	10061-01-5	0.005	BDL
trans-1,3-Dichloropropene	10061-02-6	0.005	BDL
Ethanol	64-17-5	0.1	BDL
Ethylbenzene	100-41-4	0.005	BDL
Ethyl Methacrylate	97-63-2	0.01	BDL
2-Hexanone	591-78-6	0.050	BDL
Iodomethane	74-88-4	0.01	BDL
Methylene Chloride	75-09-2	0.005	BDL
4-Methyl-2-Pentanone	108-10-1	0.050	BDL
Styrene	100-42-5	0.01	BDL
1,1,2,2-Tetrachloroethane	79-34-5	0.01	BDL
Tetrachloroethylene	127-18-4	0.01	BDL
Toluene	108-88-3	0.005	BDL
1,1,1-Trichloroethane	71-55-6	0.005	BDL
1,1,2-Trichloroethane	79-00-5	0.005	BDL
Trichloroethylene	79-01-6	0.005	BDL
Trichlorofluoromethane	75-69-4	0.005	BDL
Vinyl Chloride	75-01-4	0.01	BDL
Xylene (Total)	1330-20-7	0.005	BDL
Surrogate Recoveries:			
1,2-Dichloroethane-D4			113%
Toluene-D8			89%
Bromofluorobenzene			88%

BDL = Below Sample Detection Limit  
 SDL = Sample Detection Limit

COMMENTS: \_\_\_\_\_



# H Y D R O L O G I C , I N C

COMPANY NAME: Hydrologic-Asheville, Inc  
 COMPANY PROJECT NUMBER: CHAMPION  
  
 HYDROLOGIC PROJECT NUMBER: FL9431003  
 HYDROLOGIC SAMPLE NUMBER: 31003S  
 HYDROLOGIC LAB I.D.#: 399  
 SAMPLE IDENTIFICATION: SPIKE  
 DATE SAMPLED: N/A  
 DATE EXTRACTED: N/A  
 DATE/TIME ANALYZED: 9/28/94

## METHOD Spike 8240

<u>ANALYSIS</u>	<u>THEORETICAL</u> ( mg/l)	<u>ACTUAL</u> (mg/l)	<u>%RECOVERY</u>
Acetone	0.1	0.1	100%
Acrolein	0.2	0.15	75%
Acrylonitrile	0.2	0.19	100%
Benzene	0.05	0.053	106%
Bromodichloromethane	0.05	0.050	100%
Bromoform	0.05	0.062	124%
Bromomethane	0.05	0.061	122%
2-Butanone	0.1	0.083	83%
Carbon Disulfide	0.05	0.064	128%
Carbon Tetrachloride	0.05	0.058	116%
Chlorobenzene	0.05	0.062	124%
Chloroethane	0.05	0.041	82%
2-Chloro Ethyl Vinyl Ether	0.15	0.104	67%
Chloroform	0.05	0.053	106%
Chloromethane	0.05	0.034	68%
Dibromochloromethane	0.05	0.045	90%
Dibromomethane	0.05	0.048	96%
1,4-Dichloro-2-Butane	0.2	0.210	105%
Dichlorodifluoromethane	0.05	0.051	102%
1,2-Dichlorobenzene	0.05	0.050	100%
1,3-Dichlorobenzene	0.05	0.047	94%
1,4-Dichlorobenzene	0.05	0.054	108%
1,1-Dichloroethane	0.05	0.051	102%
1,2-Dichloroethane	0.05	0.046	92%
1,1-Dichloroethene	0.05	0.050	100%



# H Y D R O L O G I C , I N C .

Page 2 continued

COMPANY NAME: Hydrologic-Asheville, Inc  
 COMPANY PROJECT NUMBER: CHAMPION  
 HYDROLOGIC PROJECT NUMBER: FL9431003  
 HYDROLOGIC SAMPLE NUMBER: 31003S  
 SAMPLE IDENTIFICATION: SPIKE  
 DATE SAMPLED: N/A

## METHOD Spike 8240

<u>ANALYSIS</u>	<u>THEORETICAL</u> ( mg/l)	<u>ACTUAL</u> (mg/l)	<u>%RECOVERY</u>
trans-1,2-Dichloroethene	0.05	0.049	98%
1,2-Dichloropropane	0.05	0.050	100%
cis-1,3-Dichloropropene	0.05	0.043	86%
trans-1,3-Dichloropropene	0.05	0.041	82%
Ethylbenzene	0.05	0.067	134%
Ethyl Methacrylate	0.05	0.048	96%
2-Hexanone	0.1	0.091	91%
Iodomethane	0.05	0.065	130%
Methylene Chloride	0.05	0.028	56%
4-Methyl-2-Pentanone	0.1	0.098	98%
Styrene	0.05	0.056	112%
1,1,2,2-Tetrachloroethane	0.05	0.057	114%
Tetrachloroethylene	0.05	0.048	96%
Toluene	0.05	0.044	88%
1,1,1-Trichloroethane	0.05	0.057	114%
1,1,2-Trichloroethane	0.05	0.044	88%
Trichloroethylene	0.05	0.053	106%
Trichlorofluoromethane	0.05	0.053	106%
Vinyl Chloride	0.05	0.048	96%
Xylene (Total)	0.15	0.20	103%

### Surrogate Recoveries:

1,2-Dichloroethane-D4	104%
Toluene-D8	94%
Bromofluorobenzene	92%

BDL = Below Sample Detection Limit  
 SDL = Sample Detection Limit

COMMENTS: \_\_\_\_\_



# H Y D R O L O G I C , I N C .

COMPANY NAME: Hydrologic-Asheville, Inc  
 COMPANY PROJECT NUMBER: CHAMPION  
  
 HYDROLOGIC PROJECT NUMBER: FL9431003  
 HYDROLOGIC SAMPLE NUMBER: 31003SD  
 HYDROLOGIC LAB I.D.#: 399  
 SAMPLE IDENTIFICATION: SPIKE DUPLICATE  
 DATE SAMPLED: N/A  
 DATE EXTRACTED: N/A  
 DATE/TIME ANALYZED: 9/28/94

## METHOD Spike Dup. 8240

<u>ANALYSIS</u>	<u>THEORETICAL</u> (mg/l)	<u>ACTUAL</u> (mg/l)	<u>%RECOVERY</u>
Acetone	0.1	0.099	99%
Acrolein	0.2	0.176	88%
Acrylonitrile	0.2	0.251	125%
Benzene	0.05	0.048	96%
Bromodichloromethane	0.05	0.048	96%
Bromoform	0.05	0.049	98%
Bromomethane	0.05	0.056	112%
2-Butanone	0.1	0.103	103%
Carbon Disulfide	0.05	0.064	129%
Carbon Tetrachloride	0.05	0.050	100%
Chlorobenzene	0.05	0.043	86%
Chloroethane	0.05	0.034	68%
2-Chloro Ethyl Vinyl Ether	0.15	0.120	80%
Chloroform	0.05	0.046	92%
Chloromethane	0.05	0.031	62%
Dibromochloromethane	0.05	0.046	92%
Dibromomethane	0.05	0.048	96%
1,4-Dichloro-2-Butane	0.2	0.218	109%
Dichlorodifluoromethane	0.05	0.042	84%
1,2-Dichlorobenzene	0.05	0.038	76%
1,3-Dichlorobenzene	0.05	0.035	70%
1,4-Dichlorobenzene	0.05	0.034	68%
1,1-Dichloroethane	0.05	0.047	94%
1,2-Dichloroethane	0.05	0.047	94%
1,1-Dichloroethene	0.05	0.042	84%



# H Y D R O L O G I C . I N C .

Page 2 continued

COMPANY NAME: Hydrologic-Asheville, Inc  
 COMPANY PROJECT NUMBER: CHAMPION  
 HYDROLOGIC PROJECT NUMBER: FL9431003  
 HYDROLOGIC SAMPLE NUMBER: 31003  
 SAMPLE IDENTIFICATION: RW 1  
 DATE SAMPLED: 9/23/94

## METHOD Spike Dup. 8240

<u>ANALYSIS</u>	<u>THEORETICAL</u> (mg/l)	<u>ACTUAL</u> (mg/l)	<u>%RECOVERY</u>
trans-1,2-Dichloroethene	0.05	0.046	92%
1,2-Dichloropropane	0.05	0.050	100%
cis-1,3-Dichloropropene	0.05	0.041	82%
trans-1,3-Dichloropropene	0.05	0.041	82%
Ethylbenzene	0.05	0.046	92%
Ethyl Methacrylate	0.05	0.06	120%
2-Hexanone	0.1	0.112	112%
Iodomethane	0.05	0.054	108%
Methylene Chloride	0.05	0.029	58%
4-Methyl-2-Pentanone	0.1	0.120	120%
Styrene	0.1	0.04	80%
1,1,2,2-Tetrachloroethane	0.1	0.044	88%
Tetrachloroethylene	0.1	0.043	86%
Toluene	0.05	0.041	82%
1,1,1-Trichloroethane	0.05	0.048	96%
1,1,2-Trichloroethane	0.05	0.044	88%
Trichloroethylene	0.05	0.049	98%
Trichlorofluoromethane	0.05	0.045	90%
Vinyl Chloride	0.05	0.041	82%
Xylene (Total)	0.15	0.142	95%
Surrogate Recoveries:			
1,2-Dichloroethane-D4			106%
Toluene-D8			93%
Bromofluorobenzene			95%

BDL = Below Sample Detection Limit  
 SDL = Sample Detection Limit

COMMENTS: \_\_\_\_\_



# H Y D R O L O G I C . I N C .

COMPANY NAME: Hydrologic-Asheville, Inc  
 COMPANY PROJECT NUMBER: CHAMPION

HYDROLOGIC PROJECT NUMBER: FL9431003  
 HYDROLOGIC SAMPLE NUMBER: 31003  
 HYDROLOGIC LAB I.D.#: 399  
 SAMPLE IDENTIFICATION: RW 1  
 DATE SAMPLED: 9/23/94  
 DATE EXTRACTED: 9/27/94  
 DATE/TIME ANALYZED: 10/5/94

## METHOD TCLP 8270

<u>ANALYSIS</u>	<u>CAS NO.</u>	<u>SDL</u> ( mg/l )	<u>RESULT</u> ( mg/l )
1,4-Dichlorobenzene	106-46-7	1.0	BDL
2-Methylphenol	95-48-7	10.0	BDL
3-Methylphenol	108-39-4	10.0	BDL
4-Methylphenol	106-44-5	10.0	BDL
Hexachloroethane	67-72-1	1.0	BDL
Nitrobenzene	98-95-3	1.0	BDL
Hexachlorobutadiene	87-68-3	0.05	BDL
2,4,6-Trichlorophenol	88-06-2	1.0	BDL
2,4,5-Trichlorophenol	95-95-4	1.0	BDL
2,4-Dinitrotoluene	121-14-2	0.05	BDL
Hexachlorobenzene	118-74-1	0.05	BDL
Pentachlorophenol	87-86-5	10.0	BDL
Pyridine	110-86-1	1.0	BDL

### Surrogate Recoveries:

2-Fluorophenol	97%
Phenol-D6	91%
Nitrobenzene-D5	98%
2-Fluorobiphenyl	106%
2,4,6-Tribromophenol	99%
Terphenyl-D14	113%

BDL = Below Sample Detection Limit  
 SDL = Sample Detection Limit

COMMENTS: \_\_\_\_\_



# H Y D R O L O G I C , I N C .

COMPANY NAME: Hydrologic-Asheville, Inc  
 COMPANY PROJECT NUMBER: CHAMPION  
  
 HYDROLOGIC PROJECT NUMBER: FL9431003  
 HYDROLOGIC SAMPLE NUMBER: AEK1004  
 HYDROLOGIC LAB I.D.#: 399  
 SAMPLE IDENTIFICATION: BLANK  
 DATE SAMPLED: N/A  
 DATE EXTRACTED: N/A  
 DATE/TIME ANALYZED: 10/5/94

## METHOD Blank 8270

<u>ANALYSIS</u>	<u>CAS. NO</u>	<u>SDL</u> ( mg/l )	<u>RESULT</u> ( mg/l )
Acenaphthene	83-32-9	0.01	BDL
Acenaphthylene	208-96-8	0.01	BDL
Acetophenone	98-86-2	0.01	BDL
Aniline	62-53-3	0.01	BDL
Anthracene	120-12-7	0.01	BDL
4-Aminobiphenyl	92-67-1	0.01	BDL
Benzidine	92-87-5	0.01	BDL
Benzoic Acid	65-85-0	0.050	BDL
Benzo(a)Anthracene	56-55-3	0.01	BDL
Benzo(b)Fluoranthene	205-99-2	0.01	BDL
Benzo(k)Fluoranthene	207-08-9	0.01	BDL
Benzo(g,h,i)Perylene	191-24-2	0.01	BDL
Benzo(a)Pyrene	50-32-8	0.01	BDL
Benzyl Alcohol	100-51-6	0.020	BDL
Bis(2-Chloroethoxy)Methane	111-91-1	0.01	BDL
Bis(2-Chloroethyl)Ether	111-44-4	0.01	BDL
Bis(2-Chloroisopropyl)Ether	39638-32-9	0.01	BDL
Bis(2-Ethylhexyl)Phthalate	117-81-7	0.01	BDL
4-Bromophenyl Phenyl Ether	101-55-3	0.01	BDL
Butyl Benzyl Phthalate	85-68-7	0.01	BDL
4-Chloroaniline	106-47-8	0.01	BDL
1-Chloronaphthalene		0.01	BDL
2-Chloronaphthalene	91-58-7	0.01	BDL
4-Chloro-3-Methyl Phenol	59-50-7	0.01	BDL
2-Chlorophenol	95-57-8	0.01	BDL



# H Y D R O L O G I C . I N C .

Page 2 continued

COMPANY NAME: Hydrologic-Asheville, Inc  
 COMPANY PROJECT NUMBER: CHAMPION  
 HYDROLOGIC PROJECT NUMBER: FL9431003  
 HYDROLOGIC SAMPLE NUMBER: ABK1004  
 SAMPLE IDENTIFICATION: BLANK  
 DATE SAMPLED: N/A

## METHOD Blank 8270

<u>ANALYSIS</u>	<u>CAS NO.</u>	<u>SDL</u> ( mg/l)	<u>RESULT</u> ( mg/l)
4-Chlorophenyl Phenyl Ether	7005-72-3	0.01	BDL
Chrysene	218-01-9	0.01	BDL
Dibenz(a,h)Anthracene	53-70-3	0.01	BDL
Dibenzofuran	132-64-9	0.01	BDL
Di-N-Butylphthalate	84-74-2	0.01	BDL
1,3-Dichlorobenzene	541-73-1	0.01	BDL
1,4-Dichlorobenzene	106-46-7	0.01	BDL
1,2-Dichlorobenzene	95-50-1	0.01	BDL
3,3'-Dichlorobenzidine	91-94-1	0.020	BDL
2,4-Dichlorophenol	120-83-2	0.01	BDL
2,6-Dichlorophenol	87-65-0	0.01	BDL
Diethylphthalate	84-66-2	0.01	BDL
P-Dimethylaminoazobenzene		0.01	BDL
7,12-Dimethylbenz(a)Anthracene	57-97-6	0.01	BDL
A,A-Dimethylphenethylamine	122-09-8	0.01	BDL
2,4-Dimethylphenol	105-67-9	0.01	BDL
Dimethylphthalate	131-11-3	0.01	BDL
4,6-Dinitro-2-Methylphenol	534-52-1	0.050	BDL
2,4-Dinitrophenol	51-28-5	0.050	BDL
2,4-Dinitrotoluene	121-14-2	0.01	BDL
2,6-Dinitrotoluene	606-20-2	0.01	BDL
Diphenylamine	122-39-4	0.020	BDL
1,2-Diphenylhydrazine	122-66-7	0.020	BDL
Di-N-Octylphthalate	117-84-0	0.01	BDL



# H Y D R O L O G I C , I N C .

Page 3 continued

COMPANY NAME: Hydrologic-Asheville, Inc  
 COMPANY PROJECT NUMBER: CHAMPION  
 HYDROLOGIC PROJECT NUMBER: FL9431003  
 HYDROLOGIC SAMPLE NUMBER: ABK1004  
 SAMPLE IDENTIFICATION: BLANK  
 DATE SAMPLED: N/A

## METHOD Blank 8270

<u>ANALYSIS</u>	<u>CAS NO.</u>	<u>SDL</u> ( mg/l )	<u>RESULT</u> ( mg/l )
Fluoranthene	206-44-0	0.01	BDL
Fluorene	86-73-7	0.01	BDL
Hexachlorobenzene	118-74-1	0.01	BDL
Hexachlorocyclopentadiene	77-47-4	0.01	BDL
Hexachloroethane	67-72-1	0.01	BDL
Indeno(1,2,3-cd)Pyrene	193-39-5	0.01	BDL
Isophorone	78-59-1	0.01	BDL
3-Methylchloranthrene		0.01	BDL
Methyl Methane Sulfonate	66-27-3	0.01	BDL
2-Methylnaphthalene	91-57-6	0.01	BDL
2-Methylphenol	95-48-7	0.01	BDL
4-Methylphenol	106-44-5	0.01	BDL
Naphthalene	91-20-3	0.01	BDL
1-Naphthylamine	134-32-7	0.020	BDL
2-Naphthylamine	91-59-8	0.020	BDL
2-Nitroaniline	88-74-4	0.050	BDL
3-Nitroaniline	99-09-2	0.050	BDL
4-Nitroaniline	100-01-6	0.050	BDL
Nitrobenzene	98-95-3	0.01	BDL
2-Nitrophenol	88-75-5	0.01	BDL
4-Nitrophenol	100-02-7	0.01	BDL
N-Nitroso-Di-N-Butylamine	924-16-3	0.050	BDL
N-Nitrosodimethylamine	62-75-9	0.01	BDL
N-Nitrosodiphenylamine	86-30-6	0.01	BDL



# H Y D R O L O G I C . I N C .

Page 4 continued

COMPANY NAME: Hydrologic-Asheville, Inc  
 COMPANY PROJECT NUMBER: CHAMPION  
 HYDROLOGIC PROJECT NUMBER: FL9431003  
 HYDROLOGIC SAMPLE NUMBER: ABK1004  
 SAMPLE IDENTIFICATION: BLANK  
 DATE SAMPLED: N/A

## METHOD Blank 8270

<u>ANALYSIS</u>	<u>CAS NO.</u>	<u>SDL</u> ( mg/l)	<u>RESULT</u> ( mg/l)
N-Nitrosodipropylamine	621-64-7	0.01	BDL
N-Nitrosopiperidine	100-75-4	0.020	BDL
Pentachlorobenzene	608-93-5	0.01	BDL
Pentachloronitrobenzene	82-68-8	0.01	BDL
Pentachlorophenol	87-86-5	0.050	BDL
Phenacetin	62-44-2	0.050	BDL
Phenanthrene	85-01-8	0.01	BDL
Phenol	108-95-2	0.01	BDL
2-Picoline	109-06-8	0.020	BDL
Pronamide	23950-58-5	0.020	BDL
Pyrene	129-00-0	0.01	BDL
1,2,4,5-Tetrachlorobenzene	95-94-3	0.01	BDL
2,3,4,6-Tetrachlorophenol	58-90-2	0.01	BDL
1,2,4-Trichlorobenzene	120-82-1	0.01	BDL
2,4,5-Trichlorophenol	95-95-4	0.01	BDL
2,4,6-Trichlorophenol	88-06-2	0.01	BDL

### Surrogate Recovery:

2-Fluorobiphenyl	86%
Nitrobenzene-d5	88%
4-Terphenyl-D14	71%
2-Fluorophenol	79%
Phenol-D5	67%
2,4,6-Tribromophenol	86%

BDL = Below Sample Detection Limit  
 SDL = Sample Detection Limit

COMMENTS: \_\_\_\_\_



# H Y D R O L O G I C . I N C .

COMPANY NAME: Hydrologic-Asheville, Inc  
 COMPANY PROJECT NUMBER: CHAMPION  
  
 HYDROLOGIC PROJECT NUMBER: FL9431003  
 HYDROLOGIC SAMPLE NUMBER: 3100ST  
 HYDROLOGIC LAB I.D.#: 399  
 SAMPLE IDENTIFICATION: SPIKE  
 DATE SAMPLED: N/A  
 DATE EXTRACTED: N/A  
 DATE/TIME ANALYZED: 10/5/94

## METHOD Spike 8270

<u>ANALYSIS</u>	<u>THEORETICAL</u> (ug/l)	<u>ACTUAL</u> (ug/l)	<u>%RECOVERY</u>
1,2,4-Trichlorobenzene	100	114	114
Acenaphthene	100	84.4	84
2,4-Dinitrotoluene	100	75.0	75
Di-n-Butylphthalate	100	81.1	81
Pyrene	100	85.8	86
N-Nitrosodi-n-propylamine	100	92.1	92
1,4-Dichlorobenzene	100	90.4	90
Pentachlorophenol	100	59.5	60
Phenol	100	58.2	58
2-Chlorophenol	100	92.8	93
4-Chloro-3-Methylphenol	100	109	109
4-Nitrophenol	100	72.3	72
SURROGATE RECOVERY:			
2-Fluorophenol			70
Phenol-D6			86
Nitrobenzene-D5			106
2-Fluorobiphenyl			114
2,4,6-Tribromophenol			113
Terphenyl-D14			118

BDL = Below Sample Detection Limit  
 SDL = Sample Detection Limit

COMMENTS: \_\_\_\_\_



# H Y D R O L O G I C , I N C .

COMPANY NAME: Hydrologic-Asheville, Inc  
 COMPANY PROJECT NUMBER: CHAMPION  
  
 HYDROLOGIC PROJECT NUMBER: FL9431003  
 HYDROLOGIC SAMPLE NUMBER: 31003SDT  
 HYDROLOGIC LAB I.D.#: 399  
 SAMPLE IDENTIFICATION: SPIKE DUPLICATE  
 DATE SAMPLED: N/A  
 DATE EXTRACTED: N/A  
 DATE/TIME ANALYZED: 10/5/94

## METHOD Spike Dup. 8270

<u>ANALYSIS</u>	<u>THEORETICAL</u> (ug/l)	<u>ACTUAL</u> (ug/l)	<u>%RECOVERY</u>
1,2,4-Trichlorobenzene	100	108	108
Acenaphthene	100	83.8	84
2,4-Dinitrotoluene	100	72.6	73
Di-n-butylphthalate	100	86.1	80
Pyrene	100	79.6	80
N-Nitrosodi-n-Propylamine	100	84.0	84
1,4-Dichlorobenzene	100	85.8	86
Pentachlorophenol	100	68.4	69
Phenol	100	84.4	85
2-Chlorophenol	100	93.8	94
4-Chloro-3-Methylphenol	100	120	120
4-Nitrophenol	100	103	103

### SURROGATE RECOVERY:

2-Fluorophenol	78
Phenol-D6	92
Nitrobenzene-D5	112
2-Fluorobiphenyl	114
2,4,6-Tribromophenol	116
Terphenyl-D14	118

BDL = Below Sample Detection Limit  
 SDL = Sample Detection Limit

COMMENTS: \_\_\_\_\_



Verbal: ☐  
Phone Mo: \_\_\_\_\_  
Fax ☐  
Fax Mo: \_\_\_\_\_  
Typed copy ☐  
Date: \_\_\_\_\_

**NOTES**

[illegible]

9:30



50212

## HYDROLOGIC, INC.

## Chain- of-Custody

Client information:

Name: CHAMPION INTERNATIONALAddress: CANTON NCContact: JIM GIAQUE Phone: 704-646-2028WESTON CONTACT BILL MORRIS 919-380 7416

Sample information:

Sample Description	Sample Date/Time	Analysis Required (Be specific)	Sample type Grab/Composite	Preservation (Be specific)	# of Container
CHAMP. RWI-METALS	9-23-94/1032	TCLP METALS	GRAB	ICED < 4°C	1 Lamber
CHAMP- RWI- 8240	9-23-94/1033	TCLP 8240	GRAB	↓	↓
CHAMP- RWI- 8270	9-23-94/1030	TCLP 8270	GRAB	↓	↓
CHAMP- RWI- 9040	9-23-94/	TCLP PH METHOD 9040	GRAB	↓	↓

Sampler's Signature: Edward J. MackeyRelinquished by: EJMDate/Time: 23-SEP-94 / 1200Received by: [Signature]Date/Time: 9-23-94 1200

Relinquished by: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Received by: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Relinquished by: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Received by: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Comments:

QC SPIKE REQUESTED



EXTRACTION WELL EW-1  
REPORT OF ANALYSES  
pH SUMMARY

DATE SAMPLED	-- REPLICATE --		REPORTED VALUE	SAMPLE SOURCE
	A	B		
09/23/94	12.524	12.413	12.5	EW-1
10/06/94	12.094	12.098	12.10	EW-1
10/07/94	12.06	12.05	12.06	EW-1
10/10/94	12.3	12.32	12.31	EW-1

FILE:EW1PH



H Y D R O L O G I C , I N C .

REPORT OF ANALYSES

CHAMPION INTERNATIONAL  
PO BOX C-10  
MAIN STREET  
CANTON, NC 28716-  
Attn: JIM GIAUQUE

PROJECT NAME: CHAMPION INTER  
DATE: 10/07/94

(Page 1 of 1)

SAMPLE			
LAB No.	DATE	TIME	SAMPLER
51103	10/06/94	1350	EJM

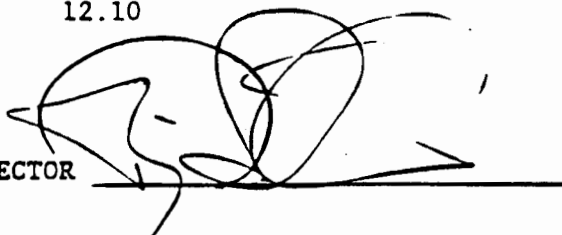
DELIVERY TO LAB	
DATE	TIME MATRIX
10/06/94	1600 WW

CLIENT STATION ID: CHAMPION INT  
LAB #: 51103

PH, LAB

std units 12.10

LABORATORY DIRECTOR





		Precision Data				Accuracy Data	Reference Sample Data			
Analyte	LAB ID	Replicate A	Replicate B	Range	RPD %	% Spike Recovery	Reference Sample ID	Target	Found	% Recovery
PH,LAB	51103	12.094	12.098	0.0040	0.03	-----	APG 11836	3.84	3.76	97.90
EPA 150.1 std units		-----	-----	-----	-----	-----	HI BUFFER	12.45	12.46	100.10



51220

## HYDROLOGIC, INC.

## Chain- of-Custody

Client information:

Name: CHAMPIONAddress: CARTON, NCCHAMPION Contact: JIM GUAQUE Phone: 704-646-2028  
WESTON BILL MORRIS 915-380-7410

Sample information:

Sample Description	Sample Date/Time	Analysis Required (Be specific)	Sample type Grab/Composite	Preservation (Be specific)	# of Containers
CHAMP - MW1-03	7/10/94 1420	pH (5040)	GRAB	ICED < 4°C	1

Sampler's Signature: Edward J. HardingRelinquished by: EJM  
Date/Time: 7-OCT-94/1557Received by: Molly Newman  
Date/Time: 10-7-94 1600Relinquished by: \_\_\_\_\_  
Date/Time: \_\_\_\_\_Received by: \_\_\_\_\_  
Date/Time: \_\_\_\_\_Relinquished by: \_\_\_\_\_  
Date/Time: \_\_\_\_\_Received by: \_\_\_\_\_  
Date/Time: \_\_\_\_\_

Comments:



H Y D R O L O G I C , I N C .

REPORT OF ANALYSES

CHAMPION INTERNATIONAL  
PO BOX C-10  
MAIN STREET  
CANTON, NC 28716-  
Attn: JIM GIAUQUE

PROJECT NAME: CHAMPION INTER  
DATE: 10/10/94

(Page 1 of 1)

SAMPLE			
LAB No.	DATE	TIME	SAMPLER
51220	10/07/94	1420	EDWARD

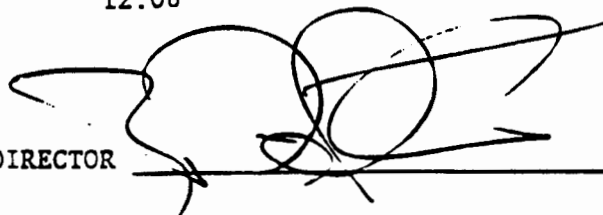
DELIVERY TO LAB	
DATE	TIME MATRIX
10/07/94	1600 WW

CLIENT STATION ID: CHAMP-MW1-03  
LAB #: 51220

PH, LAB

std units 12.06

LABORATORY DIRECTOR





H Y D R O L O G I C , I N C .

DATE. TIME. ANALYST REPORT

ANALYSIS	METHOD	ANALYSIS		ANALYST
		DATE	TIME	
PH	EPA 150.1	10/07/94	1300	MGN



# H Y D R O L O G I C , I N C .

QC REPORT FOR CHAMPION INTERNATIONAL 10/10/94

QA/QC for SAMPLE Nos: 51220,

Page 1

Analyte	LAB ID	Precision Data				Accuracy Data	Reference Sample Data			
		Replicate A	Replicate B	Range	RPD %	% Spike Recovery	Reference Sample ID	Target	Found	% Recovery
PH, LAB	51220	12.06	12.05	0.010	0.08	-----	BUFFER 4.0	4.00	3.97	99.30
EPA 150.1	-----	-----	-----	-----	-----	-----	HI BUFFER	12.45	12.35	99.20
std units	-----	-----	-----	-----	-----	-----	APG 11836	3.84	3.76	97.90



H Y D R O L O G I C , I N C .

REPORT OF ANALYSES

CHAMPION INTERNATIONAL  
PO BOX C-10  
MAIN STREET  
CANTON, NC 28716-  
Attn: JIM GIAUQUE

PROJECT NAME: CHAMPION  
DATE: 10/11/94

(Page 1 of 1)

	SAMPLE			
LAB No.	DATE	TIME	SAMPLER	
51238	10/10/94	1240	WILLIAM	

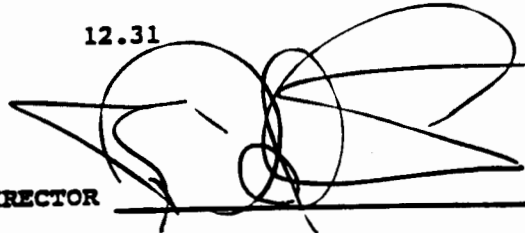
DELIVERY TO LAB	
DATE	TIME MATRIX
10/10/94	1410 WW

CLIENT STATION ID: CHAMPION  
LAB #: 51238

PH,LAB

std units 12.31

LABORATORY DIRECTOR





		Precision Data				Accuracy Data	Reference Sample Data			
Analyte	LAB ID	Replicate A	Replicate B	Range	RPD %	% Spike Recovery	Reference Sample ID	Target	Found	% Recovery
PH,LAS	51238	12.30	12.32	0.020	0.16	-----	APG 11958	1.63	1.47	95.60
EPA 150.1 std units	-----	-----	-----	-----	-----	-----	HI BUFFER	12.45	12.45	100.00



51238

## HYDROLOGIC, INC.

## Chain- of-Custody

## Client information:

Name: CHAMPIONAddress: MAIN ST.  
CANTON, NCContact: JIM GUAQUE (CHAMPION) Phone: (704) 646-2028  
BILL MORRIS (WESTON) (919) 380-7400

## Sample information:

Sample Description	Sample Date/Time	Analysis Required (Be specific)	Sample type Grab/Composite	Preservation (Be specific)	# of Container
RW-1	10-10-94 1240	pH (9040)	GRAB	ICEP, 24°C	1

Sampler's Signature: William C. MorrisRelinquished by: WILLIAM C. MORRISDate/Time: 10-10-94 / 1440Received by: Melina ShookDate/Time: 10-10-94

Relinquished by: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Received by: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Relinquished by: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Received by: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Comments:







**GROUNDWATER ASSESSMENT PLAN  
AT THE CANTON PULP AND PAPER MILL**

**Prepared for:**

**CHAMPION INTERNATIONAL CORPORATION  
Canton Pulp and Paper Mill  
Canton, North Carolina**

  
\_\_\_\_\_  
**William C. Morris, P.G.  
Registration Number 1218, North Carolina**

 FOR  
\_\_\_\_\_  
**William F. Beers, Jr., P.G.  
Registration Number 1037, North Carolina**

**Prepared by:**

**ROY F. WESTON, INC.  
1000 Perimeter Park Drive, Suite E  
Morrisville, North Carolina 27560**

**15 December 1994**



## TABLE OF CONTENTS

<u>SECTION</u>		<u>PAGE</u>
1	INTRODUCTION . . . . .	1-1
2	PHYSICAL SETTING . . . . .	2-1
	2.1 Regional Setting . . . . .	2-1
	2.2 Site Setting . . . . .	2-2
3	INTERIM RESPONSES . . . . .	3-1
	3.1 Interim Response - Receptor Survey . . . . .	3-1
	3.2 Interim Response - Water Quality Monitoring . . . . .	3-1
	3.3 Interim Response - Investigation of Potential Source Areas . . . . .	3-3
	3.4 Interim Response - Initial Groundwater Recovery Well . . . . .	3-3
	3.5 Interim Response - Additional Groundwater Recovery Wells . . . . .	3-14
4	TECHNICAL APPROACH . . . . .	4-1
	4.1 Review of Facility Records . . . . .	4-4
	4.2 Identification of Artificial Subsurface Structures . . . . .	4-5
	4.3 Preparation of Health and Safety Plan . . . . .	4-5
	4.4 Utility Scoping . . . . .	4-5
	4.5 Soil Boring Procedures . . . . .	4-5
	4.6 Temporary Piezometer Installation . . . . .	4-6
	4.7 Groundwater Level Observation Point Installation . . . . .	4-7
	4.8 Development Procedures . . . . .	4-8
	4.9 Elevation and Location Survey and Liquid Level Measurements . . . . .	4-8
	4.10 Groundwater Quality Tests . . . . .	4-9
	4.11 Rising-Head Permeability Tests . . . . .	4-11
	4.12 Pump Test . . . . .	4-11
	4.13 Decontamination Procedures . . . . .	4-12
5	REPORTING . . . . .	5-1
6	SCHEDULE . . . . .	6-1



## SECTION 1

### INTRODUCTION

At the request of Champion International Corporation (Champion), Roy F. Weston, Incorporated (WESTON.) has prepared this groundwater assessment plan for the Champion Canton Pulp and Paper Mill. The assessment plan has been developed in response to recent observations of isolated seeps along an approximate one-quarter mile length of the banks of the Pigeon River, where the river flows past the Canton Mill.

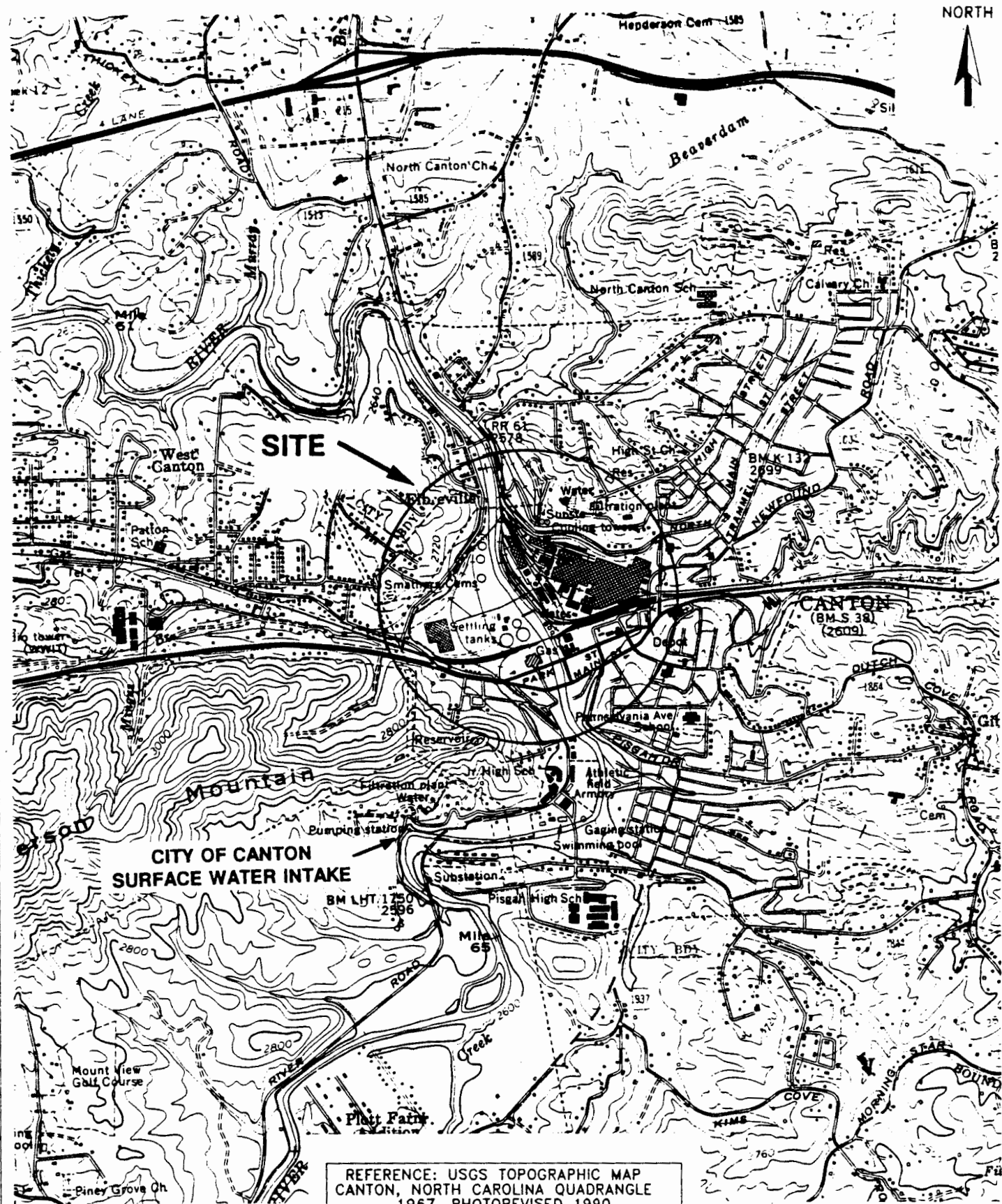
The Mill is located in the western portion of North Carolina, in the town of Canton, Haywood County (Figure 1). Interstate Highway 40 runs about 1.5 miles north of the site. The Pigeon River flows through the site.

The Mill has been in operation since 1908, and makes paper and paper board products. The area of the Mill to be investigated has been utilized over the past 80 years for different types of operations related to the pulp and paper making processes. Certain process operations are no longer employed, and the buildings which housed these operations have been demolished, with new buildings constructed in their locations. An investigation of potential source areas has been initiated. The on-going investigation is focused on areas of the Mill which generate or handle materials having high pH and/or visible coloration (characteristic of the observed seeps).

Analysis of a water sample collected from the seeps indicated that some inorganic compounds (cadmium, chromium, lead, iron and manganese) and one organic compound (naphthalene) were present at concentrations above North Carolina Groundwater Quality Standards (NCGWQSs). Upon review of the laboratory data, the North Carolina Department of Environment, Health, and Natural Resources (DEHNR), Division of Environmental Management (DEM), Groundwater Section, Asheville Region, issued a Notice of Violation (NOV) to Champion. The NOV, dated 1 September 1994 and received by Champion on 7 September 1994, indicated that a Comprehensive Site Assessment (CSA) and a Corrective Action Plan (CAP) were needed to address the seeps. The CSA and CAP are to be submitted by 15 March 1995, and acknowledgement of the NOV was required within two weeks of the NOV. On 14 September 1994, Champion responded with a letter to DEHNR which indicated that a CSA and CAP would be prepared and submitted by 15 March 1994.

The intent of this plan is to present a scope of work directed at preliminarily assessing the flow characteristics and quality of groundwater at the site. The work scope encompasses those elements needed to perform a CSA, as identified in the guidance document, "Groundwater Section Guidelines For The Investigation and Remediation of Soil and Groundwater", June 1993,







North Carolina DEHNR, Groundwater Section. (Detailed identification of potential receptors is not included at this time as the nature and extent of potential contamination has not been identified, and the search area for potential receptors is undefined. Moreover, inquiries have been made with the City of Canton to identify areas serviced by municipal water, and it was indicated that all of the City of Canton receives water from the City. Additionally, the understandings are that there are no known public surface water receptors within 1500 feet downstream of the seeps, and little, if any, potential for the seeps to impact receptors or media other than the Pigeon River. Recommendations for further evaluation of potential receptors will be generated if warranted by the findings of this initial phase of work.)

This plan presents the program for conducting the assessment, which will include examination of current and historical site data, the installation of eight piezometers, collection of groundwater level data, execution of slug tests at selected piezometers, field measurements of groundwater quality, and extensive laboratory testing of groundwater samples. Additionally, a groundwater extraction well has been installed and placed into operation, and a performance test will be run at the extraction well. Upon completion of the field program and analysis of the data, a report will be generated discussing the findings of the program. Recommendations for further assessing the site, as warranted, will be presented.

As only limited site-specific information for groundwater is available for the site, a phased investigative approach has been developed. The initial phase of investigation is intended to collect fundamental information regarding groundwater flow characteristics such as flow direction, aquifer thickness, hydraulic conductivity, and linear flow velocity. Additionally, basic groundwater quality parameters will be screened, including pH, temperature, and specific conductance. The screening will examine both lateral and vertical variations in the above parameters. Groundwater samples will be collected and analyzed for pH, conductance, color, metals, hydroxide, volatile organics, extractable organics, extractable base/neutral organics, and chlorinated phenolics (Table 1). Analysis of the data from the initial investigation will serve to focus and direct further investigation, if such additional investigation is indicated.

In the interim, a groundwater extraction well has been installed and placed into operation (Figure 2). Operation of the extraction well is intended to arrest discharge of groundwater into the Pigeon River in areas where seeps were recently observed. Preliminary groundwater flow modeling suggests that an extraction rate of 1 to 5 gallons per minute will be sufficient to capture groundwater in this area of the site prior to its discharge into the river. However, it is noted that many of the parameters utilized in the flow model were estimated from limited data. Therefore, field testing is needed to refine the operating characteristics of the extraction well and its effects on the aquifer. Some field testing is being implemented as an interim response, including soil sampling at 13 locations, installation of six temporary groundwater observation points and one temporary piezometer, and slug testing of the piezometer. This data will be used



**TABLE 1**  
**ANALYTIC SUITE FOR GROUNDWATER**

VOLATILE ORGANICS			
Benzene Bromoform Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane 2-chloroethylvinyl ether	Chloroform Dichlorobromomethane 1,1-dichloroethane 1,2-dichloroethane 1,1-dichloroethylene 1,2-dichloropropane 1,3-dichloropropylene	Ethylbenzene Methyl Bromide Methyl Chloride Methylene Chloride 1,1,2,2-tetrachloroethane Tetrachloroethylene Toluene	1,2-dichloroethylene 1,1,1-trichloroethane 1,1,2-trichloroethane Trichloroethylene Trichlorofluoromethane Viny Chloride Xylene
EXTRACTABLE ORGANICS			
2-chlorophenol 2,4-dichlorophenol 2,4-dimethylphenol	2,4-dinitrophenol 2-nitrophenol 4-nitrophenol	P-Chloro-M-Cresol Pentachlorophenol	Phenol 2,4,6-trichlorophenol
CHLOROPHENOLICS			
4-chlorophenol 2,6-dichlorophenol 2,4-dichlorophenol 2,4,6-trichlorophenol 2,4,5-trichlorophenol 2,3,4,6-tetrachlorophenol Pentachlorophenol	4-chloroguaiacol 4,6-dichloroguaiacol 3,4-dichloroguaiacol 4,5-dichloroguaiacol 3,4,6-trichloroguaiacol 3,4,5-trichloroguaiacol 4,5,6-trichloroguaiacol	Tetrachloroguaiacol 4-chlorocatechol 3,6-dichlorocatechol 3,4-dichlorocatechol 4,5-dichlorocatechol 3,4,6-trichlorocatechol 3,4,5-trichlorocatechol	Tetrachlorocatechol 5-chlorovanillin 6-chlorovanillin 5,6-dichlorovanillin Chlorosyringadehyde 2,6-dichlorosyringaldehyde Trichlorosyringol
METALS			
Arsenic Barium Cadmium Chromium	Copper Iron Lead	Magnesium Manganese Mercury	Selenium Silver Zinc



**TABLE 1**  
**ANALYTIC SUITE FOR GROUNDWATER**  
(Continued)

EXTRACTABLE BASE/NEUTRAL ORGANICS			
Acenaphthene	Bis (2-Ethylhexyl) Phthalate	Dimethyl Phthalate	Hexachloroethane
Acenaphthylene	4-Bromo-Phenyl-Ether	Benzo (E) Pyrene	Indeno (1,2,3-CD) Pyrene
Anthracene	Butyl-Benzyl-Phthalate	Di-N-Butyl Phthalate	Isophorone
Benzidine	2-Chloronaphthalene	2,4-Dinitrotoluene	Naphthalene
Benzo (A) Anthracene	4-Chlorophenyl-Phenyl-Ether	2,6-Dinitrotoluene	Nitrobenzene
Benzo (A) Pyrene	Chrysene	Di-N-Octyl Phthalate	N-Nitro-Dimethylamine
Benzo (B) Fluoranthene	Dibenzo (A,H) Anthracene	1,2-Diphenylhydrazine	N-Nitro-Dinpropylamine
Benzo (GHI) Perylene	1,2-Dichlorobenzene	Fluoranthene	N-Nitro-Diphenylamine
Benzo (K) Fluoranthene	1,3-Dichlorobenzene	Fluorene	Phenanthrene
Bis-2-Chloroethoxy Methane	1,4-Dichlorobenzene	Hexachlorobenzene	Pyrene
Bis (2-Chloroethyl) Ether	3,3-Dichlorobenzidine	Hexachlorobutadiene	1,2,4-Trichlorobenzene
Bis (2-Chloroisopropyl) Ether	Diethyl Phthalate	Hexachlorocyclopentadiene	
OTHER			
pH	Conductivity	(OH) as NaOH or Ca(OH) <sub>2</sub>	Color



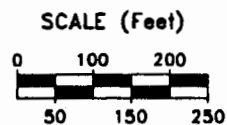
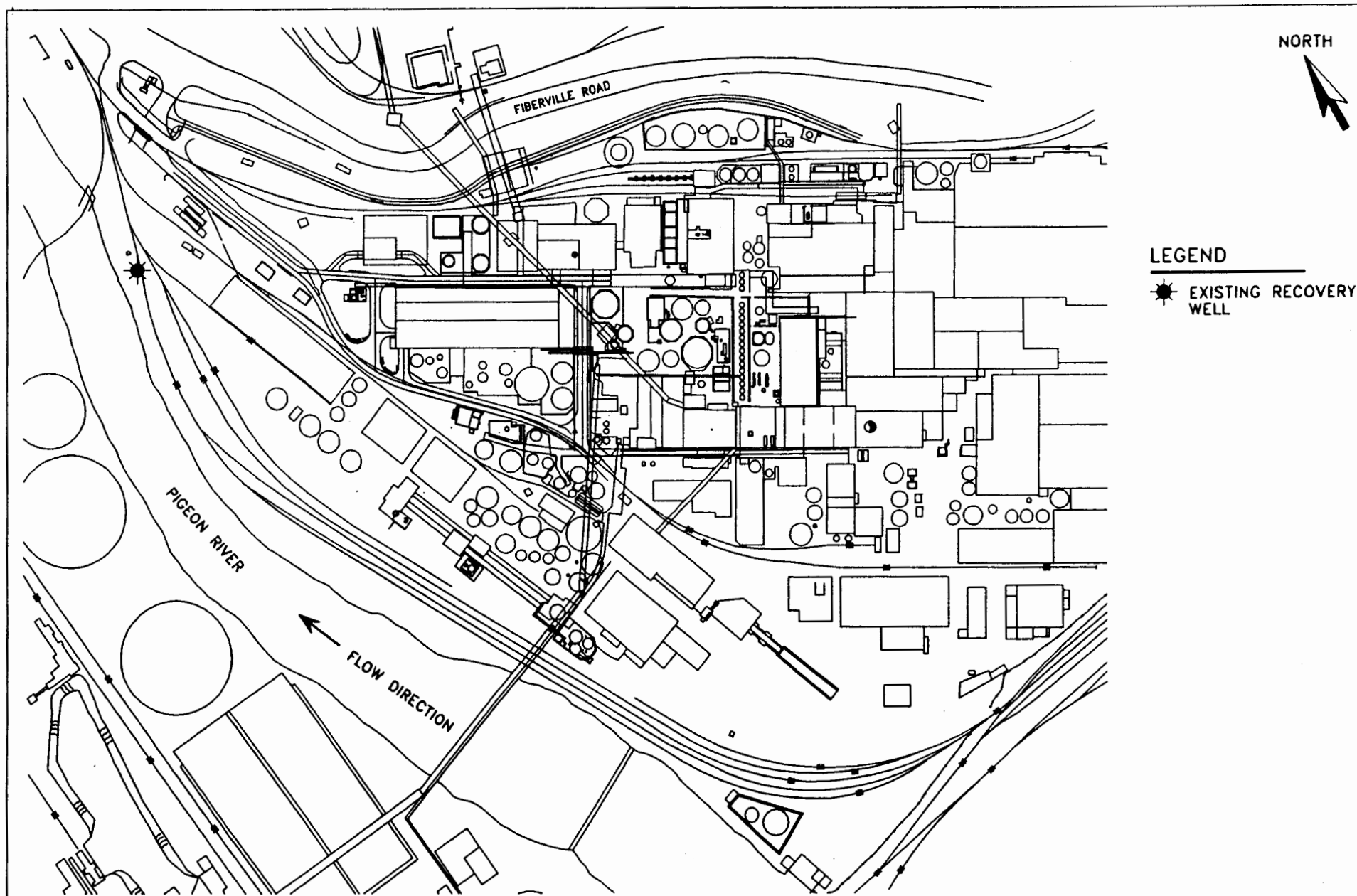


FIGURE	2
DATE	12/10/94
REVISION	0
DRAWN BY	WM
FILE	CHPRW1

EXISTING  
RECOVERY WELL  
LOCATION  
CHAMPION INTERNATIONAL  
CANTON PULP AND PAPER MILL  
CANTON, NORTH CAROLINA



to design a groundwater recovery well network to intercept groundwater flow towards the Pigeon River. These additional extraction wells are anticipated to be in operation by February 1995. As part of the CSA field program, a performance test will be conducted at one of the recovery wells to provide more accurate estimates of optimum pumping rates and hydrogeologic parameters (e.g., hydraulic conductivity, transmissivity, capture zone, etc.).

Analysis of groundwater samples from the well indicated that the water is suitable for discharge and treatment at the facility's wastewater treatment system. Therefore, piping was installed to direct the extraction well's effluent to the wastewater treatment collection system, for treatment under permit at the facility's wastewater treatment plant. As of 12 December 1994, approximately 51,800 gallons of groundwater have been pumped from the existing recovery well.

Other interim responses conducted to date include on-going monitoring of surface water quality in the Pigeon River at seven surface water stations. Surface water samples are routinely collected and analyzed for pH and conductivity. Conductivity and pH are also monitored several times daily at the Fiberville Bridge as part of Champion's NPDES monitoring program.

An extensive program is underway to test and inspect possible source areas at the facility, including sewers, sumps and U-drains. Inspection of the sewers closest to the Pigeon River has been completed, and is continuing in other areas of the facility.

As indicated above, an investigation of public water supplies in the vicinity of the Mill has been initiated. This investigation is still in process.



## SECTION 2

### PHYSICAL SETTING

In developing the planned investigation, it is useful to examine existing information on the geology and hydrogeology of the region and the site. This section presents an overview of the physical setting of the site. Both regional and site-specific physical characteristics are discussed.

#### 2.1 Regional Setting

The site is located in the western portion of North Carolina, in the Blue Ridge Province. The 1985 State of North Carolina Geologic Map (North Carolina Geological Survey, 1985) places the area in the Blue Ridge Belt. The 1985 Geologic Map indicates that the site lies within a Middle Proterozoic sequence of highly metamorphosed (kyanite to sillimanite facies) sedimentary and igneous rock described as felsic and biotite gneiss which are locally migmatitic and mylonitic. Local intrusions of later Proterozoic mafic and felsic plutons are present.

The area in the vicinity of the site is mapped as the Earliest Gap Biotite Gneiss, a 4,000 foot thick sequence of well foliated, highly layered gneiss (North Carolina Geological Survey Bulletin 90, Geology of the Sandmush and Canton Quadrangles, North Carolina, 1988). This unit is of Middle Proterozoic age, estimated at approximately 1.2 to 1.3 billion years old. The protolith of the sequence is thought to have been a repeating sequence of thin mafic and felsic volcanic rock. It is highly jointed and folded, comprised primarily of biotite gneiss. As the biotite content increases, the gneiss becomes more schistose. Muscovite is present in much lesser quantities than biotite. Amphibolite occurs as thin layers, lenses and pods. Interlayered calc-silicate granofels may also be present, though much less abundantly than the amphibolite. The Earliest Gap Biotite Gneiss contacts the nearby Ashe Metamorphic Suite along the Holland Mountain thrust fault. The units are readily distinguished based on the absence of muscovite and aluminous minerals in the gneiss (both of which are common in the Ashe metamorphic Suite).

Regional soils are generally comprised of thin alluvium (clastic material deposited by rivers and streams) and colluvium (coarse to fine grained material moved downward primarily by gravity). The alluvium and colluvium are modified by running water, vegetation, and weathering. Underlying this surface material is a variable thickness of saprolite (rock which has been weathered in-situ to soil). The saprolite is typically finer grained nearer the surface, where weathering is most pronounced. With increasing depth, the degree of weathering decreases, and the saprolite typically becomes progressively coarser. Eventually, the saprolite grades into heavily fractured rock, which typically becomes less fractured with depth. The transition from saprolitic soils to fractured rock may be gradual or abrupt, and may be highly variable over short distances.



Groundwater in the region may be present in the soil (filling interstitial spaces) and in the fractured rock (filling the fractures). Depth to groundwater is highly variable, depending to a large degree on the surface topography. In low lying areas, groundwater may be encountered within 10 feet or less of ground surface, whereas depth to groundwater on hilltops may be in excess of 100 feet.

The area is drained by numerous small creeks and the larger Beaverdam Creek and Hominy Creek. Patton Branch is located west of the site. An unnamed creek runs along the northern border of the site. The creeks and branches drain into the Pigeon River, located along the western border of the site. In the vicinity of the site, the Pigeon River flows from south-to-north.

## **2.2 Site Setting**

Only limited information is available for the geology and hydrogeology underlying the site. In general, the site is extensively developed, and exhibits relatively minor relief in comparison to undeveloped areas surrounding the site. Shallow groundwater appears to flow towards the Pigeon River, as evidenced by seeps visible along the banks of the Pigeon River. Given that the Pigeon River flows through the site, the groundwater flow direction is, in a very general sense, expected to be westerly across that portion of the site east of the river, and easterly across that portion of the site west of the river.

Some lithologic logs are available for soil borings advanced at the site (Law Engineering Testing Company, 1984). A review of these logs indicates a surface layer of gravel and crushed stone fill material, typically one-to-three feet thick, is present in many areas. This surface layer is frequently underlain by silty sand to sandy silt fill of variable thickness, extending to depths of six-to-twelve feet below ground surface (BGS). Unconsolidated soils (logged as alluvium), generally consisting of silty sand to sandy silt with variable amounts of mica, gravel and natural organic material (e.g., wood and plant fragments) underlies the fill, which is in turn underlain by saprolite. The saprolite grades into partially weathered rock, which grades into fractured rock (identified as gneiss in some borings logs). Auger refusal was reported at depths ranging from 14.5 feet BGS to 39 feet BGS, although refusal depths of 20-to-25 feet BGS were most common. Recent drilling by WESTON at the recovery well location identified gravelly fill material from ground surface to approximately 2.5 feet BGS, underlain by silty sand (probable fill) to a depth of 16 feet BGS. A gravel with sand was encountered from 16 feet to 19.2 feet BGS, which was underlain by saprolitized gneiss to 36 feet BGS (the total depth of the borehole).

Groundwater was encountered in the borings at depths of approximately 5 feet BGS to 15 feet BGS, with typical groundwater depths of about 7 feet BGS to 11 feet BGS. From two profiles illustrating groundwater levels in some of the soil borings, the general groundwater elevation appears to decrease nearer the Pigeon River, supporting the expectation that groundwater flows towards and discharges into the river. Recent drilling by WESTON at the recovery well location



encountered groundwater at a depth of approximately 14.5 feet BGS. Visual estimates of the water level in the Pigeon River at that time suggested the groundwater level at the drilling location was greater than the River water level, indicative of groundwater flow towards the River.



## SECTION 3

### INTERIM RESPONSES

During the period over which this work plan has been developed, interim responses directed at identifying local public water supply sources, monitoring water quality along the Pigeon River, intercepting groundwater flow into the Pigeon River, and investigating possible source areas have been implemented. Efforts to install a more extensive extraction well network have been initiated. A summary of these activities is discussed in the following subsections.

#### **3.1 Interim Response - Local Water Supply**

An investigation of public water supply sources for areas surrounding the Mill has been initiated. Inquiries regarding municipal water service areas have been made of the City of Canton. At this time, the City indicated that all areas within the Canton City limits are supplied with water by the City. A map of the service areas is being generated by the City at this time. Additionally, it is currently understood that the intake for the City's water system is located on the Pigeon River, approximately 1 mile upstream of the Mill (Figure 1).

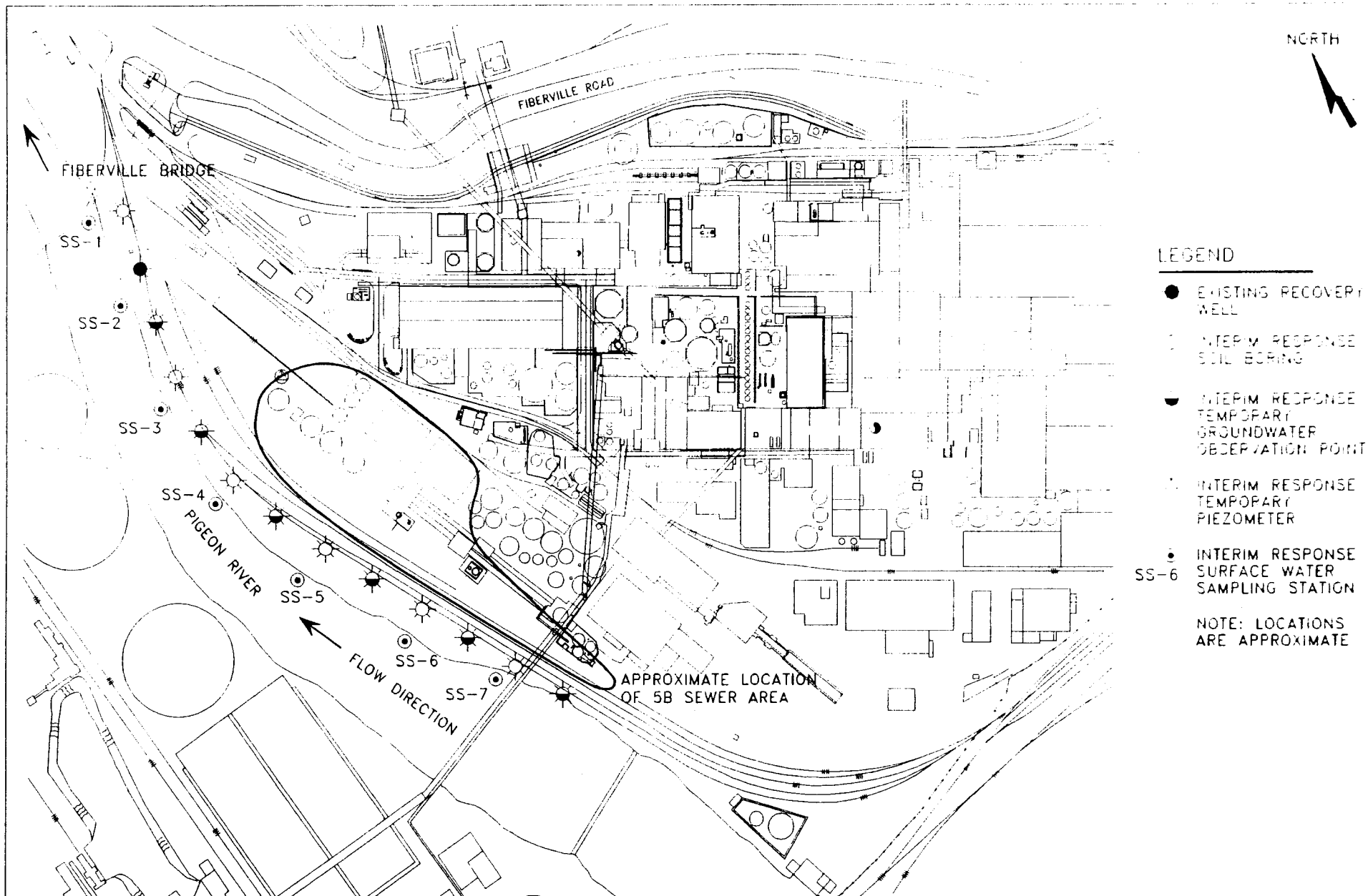
#### **3.2 Interim Response - Water Quality Monitoring**

In June 1994, an apparent seep of discolored groundwater was observed along the east bank of the Pigeon River in the vicinity of the Mill. A berm was constructed in the vicinity of the seep and a sump pump was placed within the bermed area. Initially, the sump pump discharged into railway car holding tanks, and samples of the sump pump effluent were collected. Results of the sampling indicated the material was suitable for processing by the Mill's wastewater treatment plant. A conveyance line was installed, and the effluent was subsequently routed to the treatment plant, following approval by DEHNR.

Following the initial observation of a seep in the Pigeon River, the banks along the river were visually examined, and a total of seven areas of discoloration, possibly indicative of discharge of discolored groundwater into the river, were identified. The discoloration is only intermittently visible, and is dependent in part on the (variable) flow volume of the river.

A surface water monitoring program was established to assess possible impact to the surface water of the river at these locations. The ongoing program involves collection of surface water samples from the Pigeon River at the seven locations where discoloration has been observed (Figure 3). Samples are analyzed at an Asheville, North Carolina laboratory for pH and specific conductivity. The samples are collected by submerging laboratory cleaned sample bottles beneath the water and allowing them to fill. The bottles are labeled with the station number and date and time of collection, and are hand delivered the same day to the local laboratory for







analysis. Table 2 presents results to date of this surface water monitoring program. Normally samples are collected weekly, but due to concerns for the safety of the sampling personnel and the potential for excessive dilution, surface water samples are not collected at times when the estimated river flow is greater than 150 million gallons per day.

Conductivity and pH data are also available from Pigeon River surface water samples collected near the Fiberville Bridge. This location is downstream of the seeps (approximately 1000 feet downstream of surface water monitoring station number 1, corresponding to the location of the most downstream seep). Monitoring at the Fiberville Bridge location is conducted as part of Champion's NPDES permit. Samples are collected at this location several times daily (typically three times per day), and are analyzed by the Mill. Results of analyses for samples collected from 15 June 1994 through 13 December 1994 are presented in Table 3. The results suggest that the seeps are not producing a discernable impact on the pH or conductivity of the surface water of the Pigeon River at this downstream location.

### **3.3 Interim Response - Investigation of Potential Source Areas**

An investigation of potential source areas at the Mill has been undertaken since seeps were first observed at the Pigeon River. Given that the seeps evidenced elevated pH and visible discoloration, the investigations have focused on those areas of the Mill where materials having high pH or strong color are generated or handled, including a thorough and systematic inspection and testing of sewers, sumps and U-drains at several areas of the facility. The investigations are still on-going.

The first area investigated was the 5B sewer in area 5 (the area of the Mill closest to the Pigeon River, Figure 3). A majority of this sewer was replaced with sealed piping and concrete U-drains in the first quarter of 1994 (prior to any observations of seeps). Other portions of the sewer have been hydrotested and visually inspected.

The visual inspection process typically involves cleaning (including shoveling and vacuuming of accumulated liquids and solids and wire brushing of some areas), allowing the area to dry, and visually examining the cleaned area for possible cracks, corrosion, and in-flowing liquid. If inspection of the areas reveals cracks, corrosion, etc., repairs (such as grouting) are immediately effected.

Inspections are being conducted in Area 2 at this time. Upon completion of the Area 2 investigation, other areas of the facility will be investigated, as necessary.

### **3.4 Interim Response - Initial Groundwater Recovery Well**

A recovery well has been installed at the site. On 29 and 30 August 1994, a pilot boring was advanced using 6-inch outer diameter augers, with continuous split-spoon samples collected to



**TABLE 2**  
**SUMMARY OF SURFACE WATER SAMPLE ANALYSES**

Sampling Date	SITE 1		SITE 2		SITE 3		SITE 4		SITE 5		SITE 6		SITE 7		Pigeon River Flow (MGD)
	pH	Cond.	pH	Cond.	pH	Cond.	pH	Cond.	pH	Cond.	pH	Cond.	pH	Cond.	
8/10/94	8.00	334	9.40	205	8.50	103	8.70	63	8.70	216	10.20	56600	9.50	48	90.1
8/15/94	7.92	94	8.04	77	7.66	65	7.58	90	9.73	117	12.15	11020	7.52	38	119.6
9/01/94	7.20	100	9.20	118	8.10	80	9.10	81	9.70	101	12.00	4260	8.80	48	135.0
9/08/94	7.50	132	8.70	75	8.30	69	9.00	76	9.50	100	11.60	2720	9.00	92	133.4
9/20/94	7.00	169	8.90	128	7.30	108	7.40	34	9.70	108	12.10	9520	8.90	54	110.7
9/26/94	7.10	114	8.40	83	7.30	66	7.40	33	7.50	34	11.30	1631	7.80	100	126.5
10/04/94	7.08	86	9.28	140	7.48	60	8.49	39	9.47	69	11.07	855	8.88	82	131.0
10/28/94	7.60	149	9.30	102	8.30	40	9.00	41	9.50	52	11.10	924	8.70	46	137.1
11/04/94	7.30	120	9.40	165	7.70	52	7.50	40	9.00	40	12.20	9760	8.90	82	111.0
11/08/94	7.00	119	9.50	187	7.70	90	8.30	43	9.70	82	12.00	4590	8.30	49	101.5
11/15/94	6.40	268	8.80	95	8.10	35	8.60	34	9.10	48	12.70	30	9.80	115	99.3
11/23/94	7.00	124	11.50	3450	7.60	59	8.30	36	8.60	34	11.40	1355	8.50	35	122.7



**TABLE 3**  
**pH AND CONDUCTIVITY AT NEW FIBERVILLE BRIDGE**

Date	pH (Standard Units)					Conductivity (micromhos)
	East Bank	East Half	Center	West Half	West Bank	Fiberville
6/14	7.56	7.67	7.75	7.79	7.80	---
6/14	7.90	---	---	---	---	---
6/14	7.44	7.63	7.66	7.71	7.79	---
6/15	7.33	7.56	7.66	7.69	7.65	---
6/15	7.25	7.40	7.34	7.27	7.35	---
6/15	7.21	7.33	7.15	7.25	7.36	---
6/15	7.33	7.39	7.55	7.43	7.50	---
6/16	7.38	7.30	7.41	7.38	7.40	---
6/16	7.28	7.30	7.30	7.33	7.34	---
6/16	7.39	7.42	7.46	7.45	7.49	---
6/17	7.31	7.35	7.40	7.38	7.53	520
6/17	7.81	7.83	7.85	7.86	7.85	610
6/17	8.08	8.03	7.89	8.01	7.99	650
6/18	7.79	7.91	7.87	7.79	7.73	800
6/18	7.89	7.98	7.89	7.81	8.04	760
6/18	7.89	8.01	7.97	7.93	7.91	700
6/18	8.00	7.97	7.91	7.94	7.89	---
6/19	8.05	7.98	7.93	7.96	7.91	710
6/19	8.01	7.96	8.01	7.93	7.87	820
6/19	7.92	7.91	7.89	7.84	7.81	680
6/20	7.85	7.89	7.63	7.65	7.60	710
6/20	7.84	7.91	7.89	7.86	7.84	680
6/20	7.83	7.87	7.86	7.78	7.85	650
6/21	7.76	7.80	7.79	7.69	7.73	720
6/21	7.80	7.87	7.82	7.81	7.79	740
6/21	7.85	7.90	7.85	7.84	7.82	760
6/22	7.66	7.80	7.79	7.85	7.77	720
6/22	7.72	7.86	7.82	7.86	7.78	680
6/22	7.80	7.90	7.86	7.81	7.79	690
6/23	7.61	7.61	7.64	7.79	7.75	700
6/23	7.85	7.65	7.70	7.90	7.86	710
6/23	7.80	7.72	7.75	7.80	7.90	690
6/24	7.22	7.35	7.27	7.34	7.40	410
6/24	7.40	7.44	7.38	7.31	7.26	460
6/25	7.31	7.26	7.33	7.24	7.30	400
6/25	7.42	7.38	7.40	7.46	7.47	450
6/25	7.31	7.32	7.24	7.34	7.40	430
6/25	7.40	7.43	7.26	7.37	7.44	450
6/26	7.48	7.34	7.28	7.26	7.32	520



**TABLE 3**  
**pH AND CONDUCTIVITY AT NEW FIBERVILLE BRIDGE**

Date	pH (Standard Units)					Conductivity (micromhos)
	East Bank	East Half	Center	West Half	West Bank	Fiberville
6/26	7.31	7.33	7.21	7.22	7.21	470
6/26	7.44	7.30	7.36	7.27	7.30	380
6/27	7.54	7.56	7.50	7.42	7.56	440
6/27	7.21	7.16	7.11	7.13	7.24	220
6/27	7.27	7.11	7.17	7.26	7.13	240
6/28	7.32	7.24	7.20	7.36	7.26	280
6/28	7.42	7.46	7.50	7.44	7.45	430
6/28	7.52	7.48	7.61	7.52	7.57	410
6/29	7.88	7.92	8.05	7.98	7.90	440
6/29	7.63	7.65	7.60	7.61	7.56	350
6/29	7.70	7.64	7.64	7.70	7.66	400
6/30	7.76	7.60	7.68	7.64	7.68	410
6/30	7.54	7.61	7.60	7.57	7.52	460
6/30	7.71	7.75	7.72	7.75	7.71	460
7/01	7.50	7.43	7.24	7.54	7.66	380
7/01	7.43	7.51	7.65	7.68	7.61	420
7/01	7.47	7.58	7.71	7.65	7.59	360
7/02	7.55	7.51	7.22	7.30	7.44	410
7/02	7.61	7.47	7.49	7.57	7.52	380
7/02	7.58	7.50	7.38	7.43	7.50	390
7/03	7.50	7.52	7.44	7.40	7.40	420
7/03	7.65	7.60	7.50	7.57	7.39	380
7/03	7.43	7.60	7.63	7.67	7.54	410
7/04	7.52	7.50	7.47	7.51	7.56	510
7/04	7.48	7.53	7.55	7.49	7.48	480
7/04	7.56	7.45	7.51	7.60	7.63	500
7/05	7.68	7.67	7.64	7.61	7.59	620
7/05	7.54	7.50	7.53	7.66	7.52	480
7/05	7.61	7.42	7.46	7.61	7.66	510
7/06	7.44	7.46	7.52	7.47	7.50	460
7/06	7.31	7.41	7.37	7.40	7.44	450
7/06	7.49	7.42	7.49	7.52	7.51	420
7/07	7.71	7.67	7.68	7.68	7.62	470
7/07	7.54	7.50	7.41	7.55	7.37	480
7/07	7.72	7.69	7.72	7.63	7.66	420
7/08	7.70	7.63	7.73	7.59	7.65	660
7/08	7.79	7.69	7.94	7.59	7.69	620
7/08	7.72	7.50	7.90	7.61	7.60	600
7/09	7.69	7.59	7.82	7.64	7.60	580



**TABLE 3**  
**pH AND CONDUCTIVITY AT NEW FIBERVILLE BRIDGE**

Date	pH (Standard Units)					Conductivity (micromhos)
	East Bank	East Half	Center	West Half	West Bank	Fiberville
7/09	7.60	7.62	7.80	7.69	7.69	490
7/09	7.54	7.58	7.79	7.64	7.60	450
7/10	7.59	7.63	7.84	7.71	7.66	490
7/10	7.60	7.69	7.86	7.70	7.69	430
7/10	7.74	7.70	7.80	7.78	7.72	450
7/11	7.65	7.60	7.49	7.39	7.24	500
7/11	7.60	7.67	7.54	7.46	7.38	410
7/11	7.72	7.78	7.64	7.52	7.44	450
7/12	7.05	7.13	7.41	7.44	7.47	420
7/12	7.25	7.40	7.80	7.85	7.87	430
7/12	7.20	7.45	7.82	7.80	7.83	500
7/13	7.46	7.58	7.65	7.58	7.64	400
7/13	7.60	7.65	8.01	7.70	7.85	690
7/13	7.54	7.62	8.03	7.65	7.80	660
7/14	7.55	7.70	7.71	7.75	7.73	570
7/14	7.90	7.92	7.98	8.02	8.01	590
7/14	7.96	7.95	7.99	7.96	7.98	570
7/15	7.96	7.96	7.90	7.93	7.92	625
7/15	7.88	7.86	7.82	7.78	7.71	630
7/15	7.82	7.84	7.89	7.86	7.86	600
7/16	7.60	7.79	7.88	7.82	7.83	650
7/16	7.78	7.76	7.71	7.67	7.60	650
7/16	7.80	7.78	7.80	7.76	7.74	630
7/17	7.82	7.80	7.84	7.79	7.84	640
7/17	7.57	7.55	7.57	7.60	7.57	630
7/17	7.50	7.51	7.60	7.60	7.63	650
7/18	7.61	7.79	7.78	7.67	7.62	550
7/18	7.74	7.71	7.69	7.66	7.61	680
7/18	7.86	7.84	7.84	7.81	9.80	600
7/19	7.71	7.73	7.65	7.80	7.76	640
7/19	7.80	7.84	7.90	7.94	7.98	660
7/19	7.76	7.74	7.78	7.82	7.90	640
7/20	7.73	7.79	7.78	7.80	7.78	590
7/20	7.79	7.80	7.84	7.86	7.92	620
7/20	7.70	7.74	7.72	7.80	7.90	640
7/20	7.73	7.77	7.81	7.78	7.87	360
7/21	7.79	7.82	7.84	7.80	7.92	410
7/21	7.80	7.84	7.86	7.89	7.90	460
7/22	7.85	7.94	7.95	7.96	7.91	580



**TABLE 3**  
**pH AND CONDUCTIVITY AT NEW FIBERVILLE BRIDGE**

Date	pH (Standard Units)					Conductivity (micromhos) Fiberville
	East Bank	East Half	Center	West Half	West Bank	
7/22	8.15	8.11	8.07	8.00	7.94	570
7/22	8.12	8.14	8.04	8.02	7.97	580
7/23	7.98	8.00	7.99	7.97	7.91	660
7/23	7.97	8.04	8.02	8.02	7.97	590
7/23	8.12	8.10	8.07	8.00	7.96	580
7/24	7.93	7.91	7.94	7.96	7.95	650
7/24	8.09	8.09	8.00	7.92	7.93	650
7/24	8.04	7.95	7.96	7.90	7.86	620
7/25	7.79	7.82	7.76	7.84	7.80	640
7/25	7.88	7.92	7.94	7.87	7.91	740
7/26	7.89	7.91	7.97	7.94	7.92	750
7/26	7.80	7.80	7.89	7.88	7.88	740
7/26	7.90	7.86	7.84	7.76	7.74	670
7/27	7.86	8.00	8.02	7.91	7.87	590
7/27	7.88	8.04	8.10	7.94	7.89	620
7/27	7.37	7.36	7.41	7.44	7.40	190
7/28	7.65	7.61	7.60	7.60	7.57	220
7/28	7.74	7.66	7.69	7.69	7.70	360
7/28	7.71	7.70	7.65	7.64	7.68	290
7/29	7.74	7.78	7.81	7.84	7.84	220
7/29	7.47	7.43	7.48	7.42	7.36	300
7/29	7.51	7.56	7.69	7.50	7.63	320
7/30	7.63	7.46	7.61	7.59	7.59	280
7/30	7.57	7.51	7.47	7.52	7.58	600
7/30	7.62	7.55	7.53	7.70	7.64	580
7/31	7.58	7.50	7.49	7.61	7.61	540
7/31	7.61	7.66	7.60	7.69	7.68	620
7/31	7.51	7.56	7.65	7.65	7.73	600
8/01	7.55	7.61	7.50	7.57	7.60	560
8/01	7.71	7.68	7.67	7.66	7.68	580
8/01	7.68	7.73	7.69	7.70	7.75	620
8/02	7.72	7.63	7.69	7.58	7.60	600
8/02	7.76	7.78	7.76	7.71	7.70	570
8/02	7.73	7.72	7.68	7.61	7.63	570
8/02	7.69	7.61	7.52	7.57	7.50	600
8/03	7.74	7.78	7.81	7.80	7.76	580
8/03	7.71	7.64	7.60	7.69	7.64	610
8/03	7.70	7.73	7.67	7.66	7.52	600
8/04	7.90	7.86	7.82	7.84	7.88	700



**TABLE 3**  
**pH AND CONDUCTIVITY AT NEW FIBERVILLE BRIDGE**

Date	pH (Standard Units)					Conductivity (micromhos)
	East Bank	East Half	Center	West Half	West Bank	Fiberville
8/04	7.43	7.41	7.30	7.33	7.30	740
8/04	7.55	7.57	7.46	7.46	7.49	710
8/05	7.59	7.61	7.55	7.58	7.43	680
8/05	7.50	7.48	7.50	7.52	7.34	670
8/05	7.62	7.56	7.60	7.61	7.44	690
8/06	7.92	7.89	7.86	7.79	7.81	550
8/06	7.82	7.84	7.80	7.70	7.80	600
8/06	7.89	7.88	7.70	7.79	7.84	610
8/07	7.76	7.81	7.87	7.77	7.70	470
8/07	7.79	7.80	7.81	7.79	7.80	540
8/07	7.82	7.89	7.86	7.76	7.89	560
8/08	7.47	7.39	7.33	7.33	7.37	510
8/08	7.54	7.60	7.54	7.59	7.50	540
8/08	7.60	7.68	7.62	7.60	7.66	550
8/09	7.62	7.61	7.53	7.57	7.61	510
8/09	7.61	7.63	7.67	7.54	7.54	660
8/10	7.57	7.60	7.71	7.64	7.58	560
8/10	7.68	7.66	7.62	7.60	7.64	730
8/10	7.70	7.61	7.68	7.59	7.57	740
8/11	7.59	7.67	7.73	7.66	7.61	690
8/11	7.48	7.42	7.34	7.37	7.38	590
8/11	7.52	7.42	7.44	7.35	7.41	620
8/12	7.60	7.50	7.53	7.44	7.51	590
8/12	7.52	7.56	7.53	7.48	7.54	580
8/12	---	---	---	---	---	570
8/13	7.60	7.61	7.58	7.54	7.78	580
8/13	---	---	---	---	---	590
8/13	---	---	---	---	---	560
8/14	7.72	7.65	7.62	7.60	7.78	590
8/14	---	---	---	---	---	580
8/14	---	---	---	---	---	590
8/15	7.64	7.60	7.52	7.59	7.66	580
8/15	---	---	---	---	---	610
8/16	7.58	7.62	7.48	7.59	7.55	100
8/17	7.47	7.41	7.33	7.41	7.39	60
8/18	6.94	7.03	6.90	7.07	7.10	90
8/19	7.21	7.19	7.18	7.19	7.15	90
8/20	7.10	7.13	7.11	7.08	7.04	150
8/21	7.17	7.21	7.21	7.23	7.26	130



**TABLE 3**  
**pH AND CONDUCTIVITY AT NEW FIBERVILLE BRIDGE**

Date	pH (Standard Units)					Conductivity (micromhos) Fiberville
	East Bank	East Half	Center	West Half	West Bank	
8/22	7.56	7.49	7.46	7.51	7.48	200
8/23	7.62	7.51	7.50	7.47	7.48	190
8/24	7.55	7.49	7.42	7.46	7.43	210
8/25	7.59	7.57	7.61	7.54	7.49	260
8/26	7.22	7.17	7.08	7.20	7.23	270
8/27	7.28	7.20	7.23	7.20	7.26	260
8/28	7.23	7.19	7.10	7.22	7.29	300
8/29	7.26	7.28	7.32	7.28	7.31	320
8/30	7.00	7.04	7.01	6.99	6.97	320
8/31	7.20	7.24	7.21	7.23	7.26	320
9/01	7.31	7.34	7.33	7.36	7.40	400
9/02	7.20	7.23	7.14	7.19	7.30	360
9/03	7.22	7.31	7.24	7.21	7.35	300
9/04	7.52	7.47	7.43	7.48	7.41	340
9/05	7.46	7.36	7.19	7.27	7.50	390
9/06	7.33	7.17	7.02	7.11	7.19	430
9/07	7.41	7.21	7.19	7.20	7.29	440
9/08	7.49	7.36	7.23	7.30	7.33	410
9/09	7.42	7.30	7.20	7.29	7.30	400
9/10	7.48	7.34	7.24	7.34	7.38	410
9/11	7.42	7.30	7.26	7.30	7.35	390
9/12	7.51	7.57	7.62	7.66	7.59	490
9/13	7.41	7.41	7.44	7.49	7.51	470
9/14	7.69	7.73	7.67	7.62	7.59	530
9/15	7.62	7.70	7.68	7.65	7.63	490
9/16	7.61	7.64	7.67	7.63	7.63	420
9/17	7.65	7.67	7.70	7.68	7.64	550
9/18	7.71	7.67	7.73	7.74	7.69	350
9/19	7.72	7.68	7.78	7.76	7.68	440
9/20	7.71	7.70	7.80	7.78	7.69	430
9/21	7.69	7.68	7.84	7.80	7.68	450
9/22	7.61	7.69	7.80	7.78	7.60	460
9/23	7.76	7.82	7.78	7.74	7.70	670
9/24	7.96	7.88	7.78	7.83	7.80	520
9/25	7.65	7.66	7.72	7.69	7.66	480
9/26	7.66	7.69	7.66	7.67	7.69	450
9/27	7.40	7.43	7.43	7.39	7.37	600
9/28	7.80	7.81	7.84	7.81	7.77	730
9/29	7.77	7.78	7.75	7.74	7.78	510



**TABLE 3**  
**pH AND CONDUCTIVITY AT NEW FIBERVILLE BRIDGE**

Date	pH (Standard Units)					Conductivity (micromhos) Fiberville
	East Bank	East Half	Center	West Half	West Bank	
9/30	7.85	7.90	7.91	7.87	7.88	500
10/01	7.79	7.81	7.79	7.76	7.73	550
10/02	7.80	7.83	7.83	7.81	7.79	560
10/03	7.91	7.90	8.00	8.11	8.14	570
10/04	7.53	7.60	7.65	7.71	7.84	300
10/05	7.50	7.72	7.74	7.90	7.96	480
10/05	7.37	7.95	7.82	7.94	7.95	---
10/06	7.62	7.90	8.04	7.83	7.88	520
10/07	7.55	7.83	7.94	7.91	7.96	490
10/08	7.51	7.88	7.99	7.97	7.93	517
10/09	7.62	7.81	7.96	7.94	7.97	537
10/10	7.44	7.50	7.39	7.37	7.40	170
10/11	7.62	7.77	7.78	7.71	7.69	460
10/12	7.67	7.79	7.75	7.73	7.60	500
10/13	7.40	7.42	7.33	7.30	7.38	240
10/14	7.43	7.42	7.40	7.32	7.36	800
10/15	6.98	7.04	6.94	6.94	7.00	110
10/16	7.02	6.97	6.98	7.00	6.98	170
10/17	7.37	7.50	7.68	7.64	7.67	710
10/18	7.41	7.61	7.85	7.85	7.82	180
10/19	7.51	7.83	7.62	7.81	7.96	215
10/20	7.23	7.34	7.41	7.39	7.44	185
10/21	8.00	7.66	7.74	7.60	7.49	210
10/22	7.22	7.37	7.37	7.54	7.42	210
10/23	7.35	7.49	7.54	7.58	7.57	240
10/24	7.24	7.28	7.32	7.30	7.33	240
10/25	7.27	7.28	7.30	7.26	7.26	250
10/26	7.28	7.30	7.31	7.31	7.27	330
10/27	7.41	7.44	7.41	7.40	7.37	320
10/28	7.46	7.50	7.47	7.43	7.40	300
10/29	7.51	7.56	7.49	7.53	7.50	360
10/30	7.63	7.69	7.65	7.61	7.54	340
10/31	8.18	8.36	8.64	8.41	8.37	400
11/01	7.25	7.39	7.46	7.30	7.40	390
11/02	7.94	7.96	7.92	7.93	7.92	400
11/03	8.18	8.02	7.88	7.89	7.90	420
11/04	7.52	7.73	7.87	7.84	7.81	450
11/05	7.15	7.39	7.53	7.54	7.54	400
11/06	7.46	7.68	7.88	7.83	7.81	440



**TABLE 3**  
**pH AND CONDUCTIVITY AT NEW FIBERVILLE BRIDGE**

Date	pH (Standard Units)					Conductivity (micromhos) Fiberville
	East Bank	East Half	Center	West Half	West Bank	
11/07	7.50	7.61	7.71	7.68	7.69	400
11/08	7.73	7.79	7.92	7.86	7.84	440
11/09	7.69	7.72	7.84	7.84	7.81	410
11/10	7.57	7.61	7.73	7.68	7.69	460
11/11	7.54	7.56	7.62	7.60	7.60	260
11/12	7.40	7.42	7.48	7.50	7.50	350
11/13	7.52	7.50	7.53	7.56	7.52	330
11/14	7.58	7.64	7.70	7.78	7.82	340
11/15	7.52	7.68	7.80	7.82	7.80	350
11/16	7.60	7.68	7.78	7.80	7.84	340
11/17	7.58	7.72	7.70	7.82	7.82	350
11/18	---	---	---	---	---	350
11/19	---	---	---	---	---	350
11/20	---	---	---	---	---	365
11/21	7.67	7.69	7.70	7.70	7.67	480
11/22	7.60	7.57	7.61	7.57	7.59	350
11/23	7.51	5.47	7.53	7.55	7.51	400
11/24	7.47	7.44	7.36	7.41	7.41	510
11/25	7.47	7.52	7.61	7.65	7.63	480
11/26	---	---	7.82	---	---	300
11/27	---	---	7.73	---	---	280
11/28	---	---	7.86	---	---	300
11/29	---	---	7.24	---	---	400
11/30	---	---	7.21	---	---	360
12/01	---	---	7.21	---	---	300
12/02	---	---	7.62	---	---	300
12/03	---	---	7.82	---	---	220
12/04	---	---	---	---	---	250
12/05	---	---	7.74	---	---	220
12/06	---	---	7.55	---	---	260
12/07	---	---	7.63	---	---	300
12/08	---	---	7.58	---	---	280
12/09	---	---	---	---	---	120
12/10	---	---	---	---	---	220
12/11	---	---	---	---	---	180
12/12	---	---	7.62	---	---	200
12/13	---	---	7.60	---	---	210



provide lithologic information. The lithologic data indicated first saturated sediments at a depth of approximately 14.5 feet BGS. At approximately 18 feet BGS, a somewhat hard saprolite was encountered. Below this layer, less hard saprolite was encountered, some of which appeared to be highly permeable. The materials encountered in the borehole primarily consisted of unconsolidated silty sands and gravels, and saprolite of variable competence, to a total depth of about 40 feet BGS (the total depth of the borehole).

Difficult drilling conditions prevented installation of the well with the equipment mobilized to the site. On 15 and 16 September, WESTON and a different drilling subcontractor mobilized to the site and installed the recovery well. For drilling and installation of the well, large diameter (12-inch outer diameter, 10-inch inner diameter) augers were advanced to a depth of approximately 18 feet BGS (corresponding to an approximately one-foot thick zone of somewhat competent saprolite through which advancement of the large diameter augers was not possible). The augers were left in place to prevent collapse of the shallow, non-cohesive soils. The borehole was advanced below the large augers using smaller (eight inch outer diameter) augers to a total depth approximately 20 feet below first saturated sediments (approximately 40 feet BGS).

The well was constructed of four-inch diameter schedule 40 flush threaded PVC with a 20 foot section of 0.020-inch machine slotted screen. The small diameter augers were withdrawn, and construction took place in the open borehole below the base of the large diameter augers, until construction materials filled the borehole up to the large augers. As additional materials were added, the large augers were gradually extracted from the borehole. A sand pack was placed around the well screen and extended approximately two feet above the screen. A two-foot thick bentonite seal was placed above the sand pack using bentonite pellets and hydrated with potable water. Following hydration of the seal, a 5 percent bentonite/portland cement grout was tremmied into place above the seal to the surface. After the grout hardened, the well was fitted with a bolt-down flush-to-grade protective cover embedded in concrete. A locking, water-tight cap with lock was secured to the riser.

On 22 and 23 September 1994, the recovery well was developed by pumping with an electric submersible pump. Approximately five calculated well volumes were evacuated, and containerized in labeled 55-gallon steel drums. The effluent at the completion of the development was largely free of fine sediments. Measurements of the pH, conductivity, and temperature were recorded during the development process.

Following development, groundwater samples were collected from the well to characterized the water for disposal purposes. Four samples were collected from 23 September 1994 through 10 October 1994. The tests indicated the groundwater was suitable for treatment at the Mill's wastewater treatment plant, with concurrence on 21 October 1994 from the North Carolina Department of Environmental Management.



Upon receipt of the groundwater analytical results, a 3½ -inch stainless steel electric submersible pump was installed in the well on 1 and 2 November 1994. High and low water level sensor probes were placed in the well and connected to the pump controller. The flow rate is regulated with a gate valve, and measured with an in-line flow totalizer. A discharge line was installed from the well head to a nearby wastewater collection line. The effluent is discharged under permit to the wastewater treatment system.

On 7 November 1994, installation of a permanent electric power feed to the pump controller was completed, and the recovery well was activated. Initially, the flow rate of the pump was set at approximately 6 gallons per minute (GPM). By 11 November, it was observed that the pump was prematurely cutting off, and repairs were effected to the low level shut-off probe. Pumping was resumed at a flow rate of approximately 6 GPM. At this flow rate, the pump was repeatedly cycling on and off, and the flow rate was decreased incrementally over the period from 11 November through 28 November. Since 28 November to the present (12 December 1994), the pump has been operating continuously at approximately one gallon per minute. Recovery well operation is observed three times per day, and a log of instantaneous flow rate and total gallons pumped is maintained. As of 12 December 1994, over 51,800 gallons have been pumped from the recovery well.

Preliminary groundwater modeling of the recovery well operating at 1 GPM suggests that the well will develop a capture zone over a several week period which will be sufficient to arrest discharge of discolored groundwater into the Pigeon River in the area where the seep is observed. However, it is noted that many of the parameters input to the model have been estimated based on limited field data, and therefore the predictions of the model are subject to uncertainty. (A field program to collect additional necessary data is discussed in subsequent sections.)

### **3.5 Interim Response - Additional Groundwater Recovery Wells**

At this time, mobilization for a field program to install additional groundwater recovery wells is in process. Initially, 13 soil borings will be drilling using hollow stem auger methods. Twelve of the borings will be located along the foot of the levy, approximately spaced at 100 foot intervals and extending over the portion of site where seeps have been observed. One boring will be advanced approximately 175 feet east of the levy. (Approximate locations are illustrated on Figure 3; exact locations will be determined in the field, so as to account for overhead, surface and subsurface obstructions.) Each boring will be continuously split-spoon sampled from ground surface to refusal (estimated at 25 feet below ground surface) to provide lithologic information. Additionally, soil samples will be collected at five foot intervals for laboratory analysis for pH. If soil is encountered which appears to contain contaminant source material, a sample will be collected and analyzed for total metals.



At six of the borings (every other boring advanced along the levy), a temporary groundwater observation point will be installed. The points will be used to provide groundwater level data. The points will be comprised of 1-inch schedule-40 PVC, with the lower 10-feet field slotted. The augers will be withdrawn and the formation will be allowed to collapse around the point. The uppermost 5 feet of the boring will be filled with bentonite pellets, hydrated in one foot lifts during placement. The bentonite will reduce the opportunity for possible surface water to infiltrate through the disturbed soils surrounding the observation point. Borings in which temporary groundwater observation points are not installed will be abandoned by grouting from first saturation (estimated at 15 feet below ground surface) to ground surface with a 5% bentonite/cement grout.

At the boring advanced east of the levy, a temporary two-inch piezometer will be installed. The temporary piezometer will provide a groundwater level observation point at a location which will allow for calculation of a horizontal gradient at the site, and will provide a location for conducting a slug test. The piezometer will be using 2-inch diameter schedule 40, flush threaded casing and screen. The screen will be 15-feet long, with 0.010 inch machined slots. A sand pack will be placed around the screen and extend two feet above the screen. A two foot thick bentonite pellet seal will be placed above the sand pack. The remainder of the borehole will be grouted to ground surface with a 5% bentonite/cement grout. A flush mounted vault box will be installed, and a locking, water tight cap will be secured to the top of the piezometer. No sooner than eight hours after grouting of the piezometer, the piezometer will be developed by bailing, swabbing and pumping. Approximately 5 saturated borehole volumes of water will be removed from the piezometer during development.

A slug test will be conducted at the two-inch piezometer. A data transducer will be used to record water level changes in response to the insertion and subsequent removal of a PVC slug into the piezometer. Data from the slug test will be analyzed to generate estimates of hydraulic conductivity.

The temporary piezometer and the six temporary groundwater observation points will be surveyed to a benchmark, providing mean sea level elevations for the top of casings of the piezometer and points. A round of synoptic groundwater levels will be measured at the piezometer and observation points.

Data from the field program will be analyzed to support design of a groundwater extraction well network. Geologic cross-sections will be prepared, groundwater flow direction and magnitude will be calculated, aquifer thickness will be evaluated, hydraulic conductivity will be calculated, effective porosity will be estimated, and groundwater linear flow velocity will be calculated. Parameters from the evaluation will input into a groundwater flow model, and the model will be used to identify the construction characteristics, operation parameters, and inter-well spacing for a series of groundwater extraction wells estimated to be sufficient to intercept potentially contaminated groundwater prior to discharge of the groundwater to the Pigeon River.



Using the results of the groundwater modeling, the recovery wells will be installed at the site. It is anticipated that the wells will be installed in a manner similar to that employed for the existing recovery well. While on-site for installation of the recovery wells, the temporary groundwater observation points will be abandoned by removing the PVC pipe, drilling the borehole to first saturation, and grouting the boreholes to ground surface with a 5% bentonite/cement grout.

Appropriately sized pumps will be placed in the wells, and a control system will be installed. It is expected that effluent from the wells will be piped to the facility's wastewater collection system for processing by the facility's wastewater treatment plant. Sampling and laboratory analyses of groundwater from the recovery wells will be conducted to confirm the treatability of the groundwater at the wastewater treatment plant. Additionally, as part of the Comprehensive Site Assessment (discussed in Section 4), one round of groundwater samples will be collected from the existing and new recovery wells for laboratory analysis for pH, conductivity, color, metals, hydroxide (as sodium hydroxide or calcium hydroxide), volatile organics, extractable organics, extractable base/neutral organics, and chlorinated phenolics. Table 1 presents a listing of the compounds to be included in the analytic suite.) The parameters have been selected to reflect compounds potentially present in groundwater at the site, based on a review of materials used and process wastes generated at the Mill.

It is anticipated that drilling of the soil borings, installation of the temporary groundwater observation points and piezometer, surveying of the points and piezometer, measurement of groundwater levels, and slug testing of the piezometer will be completed in December 1994. Data analysis and modeling are expected to be completed in early January 1995, and installation of the recovery wells is expected to be completed by late January 1995 (weather permitting). Sampling and analysis of groundwater from the recovery wells and evaluation of the suitability of the recovery well effluent for treatment at the facility's wastewater treatment plant are estimated to be completed by mid-February 1995, at which time the pumps and controllers will be installed, with start-up of the system projected for mid- to late February 1995.



## SECTION 4

### TECHNICAL APPROACH

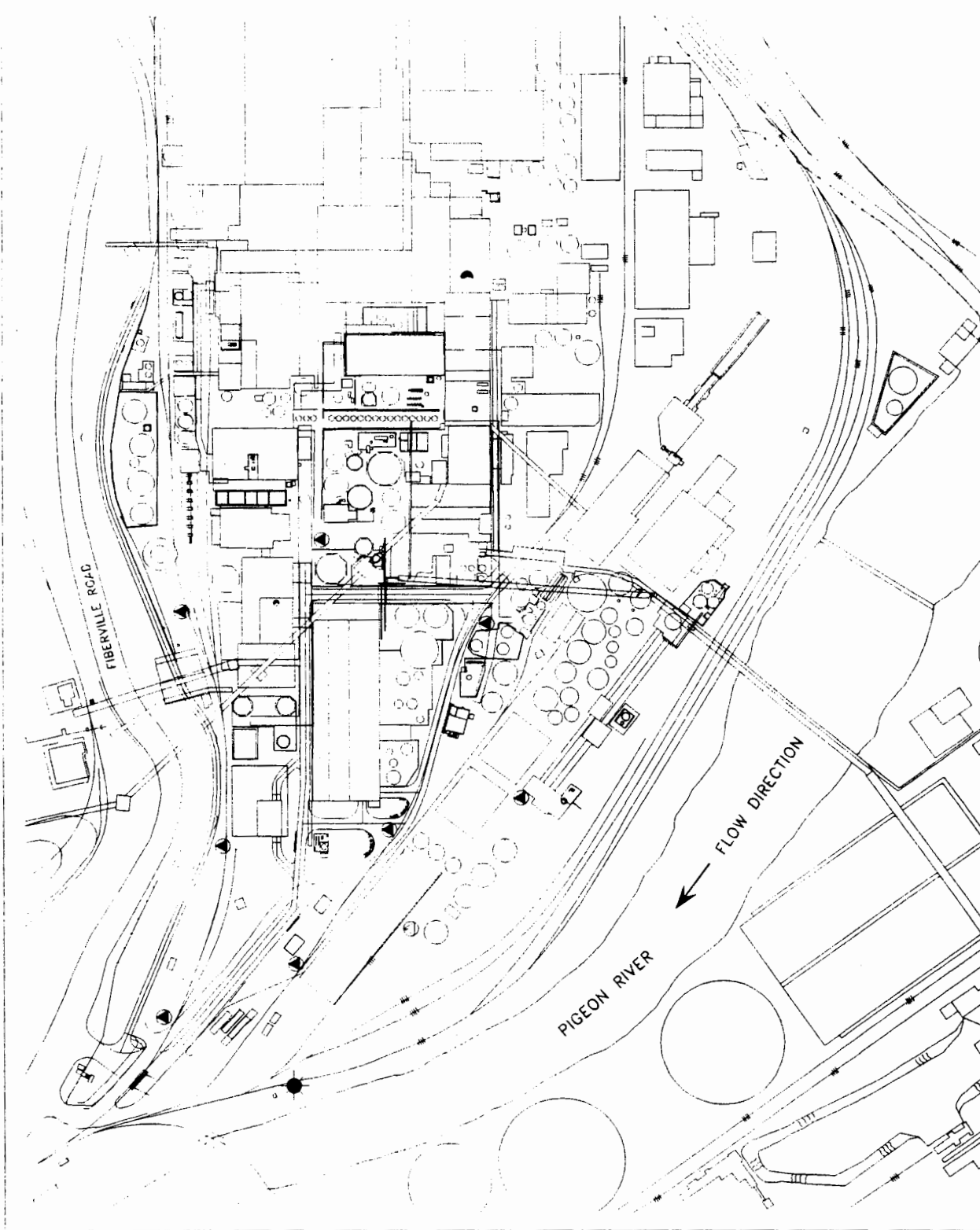
This section presents the technical approach for the Comprehensive Site Assessment (CSA). The CSA is directed at evaluating the hydrogeologic characteristics and quality of groundwater at the site. The objectives of the initial investigation include:

- Identification of current and historical processes conducted and materials used at the site;
- Identification of potential migration pathways associated with possible artificial subsurface structures present at the site;
- Characterization of relevant groundwater flow characteristics, including groundwater flow direction, gradient magnitude, aquifer thickness, hydraulic conductivity, and linear flow velocity;
- Characterization of the shallow subsurface geology at the site, including grain size distribution, plasticity, cohesiveness, color, relict and primary structures, fracturing, etc.;
- Preliminary characterization of horizontal and vertical groundwater quality, including pH, specific conductivity, color, metals, hydroxide (as sodium hydroxide or calcium hydroxide), volatile organics, extractable organics, extractable base/neutral organics, and chlorinated phenolics; and
- Assessment and limited interception of groundwater flow from the site into the Pigeon River along an approximately one-quarter mile length section of the river bank where seeps were observed.

This assessment plan details the activities to be employed for meeting the above objectives. Figure 4 illustrates the location of the recently installed recovery well and the approximate planned locations of the piezometers. (Exact locations will be determined in the field, so as to allow for overhead, surface, and subsurface obstructions.) An overview of the program is presented below:

- Current and historical records, including available aerial photographs, will be reviewed. Information will be collected regarding the types and locations of current and previous processes employed and materials used at the site, and any





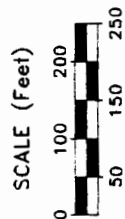
NORTH

# LEGEND

- EXISTING RECOVERY WELL
- ▲ PROPOSED TEMPORARY PIEZOMETER
- △ INTERIM RESPONSE TEMPORARY PIEZOMETER

NOTE: LOCATIONS ARE APPROXIMATE

PROPOSED TEMPORARY PIEZOMETER LOCATIONS FOR COMPREHENSIVE SITE ASSESSMENT			
FIGURE	4	DATE	12/14/94
REVISION	0	DRAWN BY	WM
FILE	CHPFIG4		



SCALE (Feet)



previous environmental incidents. The information will allow for potential source areas to be identified.

- Facility drawings will be reviewed to locate possible artificial subsurface structures, such as underground utilities, wells, basements, etc. The information will be used to evaluate possible preferential migration pathways.
- Eight soil borings will be advanced at varying locations across the facility using hollow stem auger (HSA) drilling methods. All soil borings will be continuously sampled via the split-spoon method to the groundwater table or bedrock, whichever is first encountered. Soil samples will be examined in the field for odors and/or discoloration. Field readings of soil pH will be recorded.
- The eight soil borings will be converted into temporary shallow piezometers. If sufficient groundwater is encountered in the overburden at a specific location, the piezometers will be constructed within the overburden using the HSA method. If results of the soil borings indicate insufficient saturated overburden thickness to warrant use of a temporary overburden piezometer, then a temporary bedrock piezometer will be constructed in order to intersect the groundwater table. These piezometers will be constructed using air rotary drilling methods. All piezometers will be constructed using 2-inch diameter schedule 40 PVC materials with a 15-foot section of 0.010-inch slot screen, cased to the surface, and fitted with locking protective covers.
- Four temporary observation points will be drilled and installed into the saturated overburden near the recovery well, for use during a short duration well performance (pump) test. Construction of the observation points will be by the HSA method using 2-inch diameter schedule 40 PVC materials with a 15-foot section of 0.010-inch slot screen. Upon completion of the pump test, the temporary observation points will be removed and the boreholes grouted to ground surface.
- The newly installed temporary piezometers will be developed by evacuating at least three calculated well volumes and until they are generally free of fine sediment. Field measurements of the pH, conductivity, and temperature will be recorded during this process. A maximum of five calculated well volumes will be removed during development. Development will be conducted using pumping, bailing, and/or surge and air lift methods.
- A minimum of three rounds of liquid level measurements will be performed at the newly installed piezometers and recovery well. Three data sets will allow for a check on the consistency of groundwater levels.



- The top-of-casing elevation of the newly installed piezometers and the recovery wells will be surveyed and referenced to mean sea level. The horizontal locations of the piezometers and the recovery wells will be surveyed and referenced to the Canton Mill coordinate system.
- In order to assess the groundwater quality across the site and at various depths in the aquifer, in-field measurements for specific conductivity, pH, and temperature will be performed and samples for color analysis will be collected from all of the piezometers and from the recovery wells. At each piezometer location, measurements will be recorded and samples for laboratory analysis for color, pH and conductance will be collected from three separate depths in the water column. At the recovery wells, these readings and samples will be collected from the recovery wells' effluent. Samples will also be collected at a single depth from the piezometers and from the recovery wells' effluent for laboratory analysis for metals, hydroxide (as sodium hydroxide or calcium hydroxide), volatile organics, extractable organics, extractable base/neutral organics, and chlorinated phenolics. Table 1 presents a listing of the compounds to be included in the analytic suite. The parameters have been selected to reflect compounds potentially present in groundwater at the site, based on a review of materials used and process wastes generated at the Mill.
- Rising-head permeability tests (slug tests) will be performed on four piezometers.
- A short duration pumping test will be conducted at a recovery well. Water levels will be monitored at the recovery well and the four observations points.

The following subsections discuss the methods to be employed for implementing the activities identified above.

#### **4.1 Review of Facility Records**

In order to identify potential source areas at the site, a review of facility records, including available aerial photographs, will be conducted. The records will be examined to provide information on the types of materials used and processes employed at the site, both currently and in the past. Current and historical locations of storage, transport and process areas will be identified. Records will also be examined to identify any previous environmental incidents at the site.

The information obtained during the records review will allow potential source areas to be identified. This information will be used in conjunction with field data (discussed in subsequent sections) to identify probable source areas, as warranted by the data.



#### **4.2 Identification of Artificial Subsurface Structures**

Facility drawings will be reviewed in order to locate possible artificial subsurface structures, such as underground utilities, wells, basements, etc. The location, size, length and depth for identified structures will be reviewed. It will be noted if identified structures intersect saturated sediments. The information will be used to evaluate possible preferential migration pathways.

#### **4.3 Preparation of Health and Safety Plan**

A site-specific health and safety plan (HASP) will be developed in accordance with regulations promulgated by the Occupational Safety and Health Administration (OSHA) and the requirements for hazardous waste operations specified in Title 29 of the Code of Federal Regulations (CFR), Part 1910.120. The HASP will include a description of health and safety personnel and their responsibilities, a description/characterization of the materials that may be encountered, and an assessment of the hazards associated with the site activities. In addition, the HASP will identify: the various work zones and decontamination procedures that will be implemented; guidance on the personal levels of protection (assumed to be Level D) to be worn by field personnel; monitoring requirements; emergency phone numbers; contingency plans; and addresses of local public safety departments and a nearby hospital.

#### **4.4 Utility Scoping**

Prior to drilling activities, underground piping and utilities will be located in the areas where the temporary piezometers and the observation points will be installed. The scoping will be scheduled through and cleared by the facility representative. WESTON will contact the local underground location service to clear utilities that are not owned by Champion which may cross the site. A WESTON field geologist will also be on-site during the scoping to provide the boring locations. Information from the subsurface structures identification task will also be utilized as part of the utility scoping task. If underground utilities which may affect drilling operations are detected at a proposed soil boring location, the boring will be moved to a new area in the immediate vicinity of the proposed boring. The facility representative will be notified of the new boring location.

#### **4.5 Soil Boring Procedures**

Eight soil borings will be advanced at varying locations across the facility using HSA drilling methods. All soil borings will be continuously sampled via the split-spoon method to the groundwater table or bedrock, whichever is first encountered. Field measurements of soil pH will be recorded using a portable pH meter equipped with a soil pH probe. The soils will be visually classified by WESTON's on-site geologist following WESTON standard operating practices (SOPs) for borehole logging, and recorded in the field log book and a WESTON Geolis<sub>TM</sub> Soil Borehole Log. The description will include, but not be limited to, the following:



- Principal constituent types/Grain size
- Texture
- Color
- Minor constituents, if present, and approximate proportion
- Relative plasticity of cohesive soils;
- Relative density of noncohesive and cohesive soils
- Moisture content

It is anticipated that drilling operations will be performed using Level D personal protective equipment. Continuous air monitoring will be conducted with a Monotox meter for H<sub>2</sub>S during drilling activities. If warranted by field screening, Level C protective equipment will be utilized, or drilling will be temporarily suspended until conditions allow for a resumption of work in Level D protection.

#### **4.6 Temporary Piezometer Installation**

Piezometer installation will be completed in accordance with WESTON SOPs and the American Society of Testing Materials (ASTM) Standard Method D 5092-90. Eight temporary piezometers will be constructed at the site, at the eight soil boring locations. All piezometers will be constructed of two-inch inside diameter schedule 40 flush threaded PVC with 15 feet 0.010-inch machine slotted screen. The piezometers will be designed to transect the groundwater table and penetrate approximately thirteen feet below the first saturated soil in order to evaluate groundwater quality. The piezometers will be constructed as shallow overburden piezometers in soils above bedrock if these soils show sufficient saturated thickness. If no saturation is encountered in the overburden, the piezometers will be constructed in the bedrock. Based on lithologic data recently obtained from drilling at the existing recovery well location, it is considered probable that all piezometers will be constructed into the saturated overburden.

Conventional HSA drilling methods will be utilized for construction temporary piezometers into the saturated overburden. The augers will be advanced to depth and the piezometer will be constructed within the augers as they are extracted from the borehole. A sand pack will be placed around the piezometer screen and extended approximately two feet above the screen. A two-foot thick bentonite seal will be placed above the sand pack using bentonite pellets and hydrated with potable water. Following hydration of the seal, a 5 percent bentonite/portland cement grout will be tremmied into place above the seal to the surface. Once the grout has hardened, a protective cover (either flush-to-grade vault box with a locking water-tight cap or an above ground locking monument, at Champion's direction) will be installed.

A combination of HSA and air rotary drilling methods will be utilized if temporary bedrock piezometers are constructed. The borehole will be advanced through the unsaturated overburden using HSA methods until encountering refusal. With the augers in place (to prevent collapse of



the unconsolidated overburden), the borehole will be advanced into the bedrock to depth using air rotary drilling methods. The two-inch diameter casing and screen will be constructed in the open rock borehole. The screen will be placed to intersect the groundwater table and penetrate approximately thirteen feet below the first water-bearing rock to allow for monitoring of the upper portion of the water table regardless of possible water level fluctuations.

A sand pack will be placed around the piezometer screen and extended approximately two feet above the screen. A two-foot thick bentonite seal will be placed above the sand pack using bentonite pellets and hydrated with potable water. Following hydration of the seal, a 5 percent bentonite/portland cement grout will be tremmied into place above the seal to the ground surface. Once the grout has hardened, a protective cover will be installed, as discussed above.

In the event a shallow thickness (less than about two feet) of saturated overburden is encountered (such as perched water), a 6-inch diameter schedule-40 PVC outer casing will be installed using air rotary drilling methods or large diameter hollow stem augers, depending on the stability (cohesiveness) of the overlying formation. The casing will be set into a two foot thick hydrated bentonite seal placed on top of the bedrock and finished to surface with a 5 percent bentonite/cement grout. The grout will be allowed to harden for a minimum of eight hours. Construction will then proceed as described for the bedrock piezometers.

Piezometer construction will be documented in the field log book and on the well completion form.

#### **4.7 Groundwater Level Observation Point Installation**

Four temporary groundwater level observation points will be installed in the near vicinity of a recovery well, to assist in data collection during the planned pump test. The observation points will be placed 30-, 60- and 90-feet radially away and upgradient from the recovery well. The fourth temporary observation point will be placed 30-feet cross-gradient to the recovery well (forming a 90° angle between the four points, the recovery well, and the three upgradient points). Accessibility of the locations may require modification of the planned locations, as several railroad tracks are present in the vicinity of the recovery well.

Observation points will be installed into the upper 12 feet of saturated overburden using small-diameter HSA drilling techniques. Split spoon samples will be collected at four foot intervals. Observation points will be constructed of two-inch inside diameter schedule 40 flush threaded PVC with a 15 foot 0.010-inch machine slotted screen. A PVC slip cap will be placed over the lower end of the screen. The screen and casing will be placed inside the augers, and the augers will be withdrawn from the borehole, allowing the formation to collapse around screen. The riser will extend approximately two-to-three feet above the ground surface. Temporary barricades (such as bright yellow saw horses equipped with reflectors) will be placed around the observation points. The points will not be developed.



Upon completion of the pump test activities, the temporary observation points will be abandoned. A rigid tremmie pipe will be placed inside the observation point and used to dislodge the slip cap on the base of the point. The screen and casing will be withdrawn around the tremmie pipe. Once removed from the borehole, a 5% bentonite/cement grout will be pumped through the tremmie pipe until the borehole has been filled to ground surface. The tremmie pipe will be removed, and the borehole will be topped off with grout, as necessary.

#### **4.8 Development Procedures**

Piezometer development will be conducted in accordance with WESTON SOPs and ASTM Standard Method D 448-85a. Following piezometer construction, each temporary piezometer will be developed to remove fine-grained materials by pumping, bailing, and/or surging and air lifting methods. A minimum of three calculated well volumes of water will be purged during development. Development will continue until the development waters are considered to be generally free of fine grained materials and suspended sediment resulting from installation, and when pH, conductivity, and temperature are consistent as defined by  $\pm 0.1$  pH unit,  $\pm 10\%$  conductivity, and  $\pm 1^\circ$  Celsius over three successive readings, with at least 10% of one purge volume removed between each reading. A maximum of five calculated well volumes of water will be removed during development. Development water will be containerized in 55-gallon steel drums. It is anticipated that development water will be processed at the facility's wastewater treatment plant. Field activities and measurements of pH, specific conductance, and temperature will be recorded in the field log book.

#### **4.9 Elevation and Location Survey and Liquid Level Measurements**

All newly installed piezometers, groundwater level observation points, and recovery wells will be surveyed and referenced to the same Facility benchmark. Vertical elevations will be surveyed from the nearest permanent benchmark and will be referenced to the Mean Sea Level (MSL) datum by a registered surveyor licensed in the State of North Carolina. The horizontal locations will also be surveyed at this time, with the horizontal survey tied in to the Canton Mill coordinate system. Additionally, a temporary stream staff gauge (comprised of a metal rod) will be driven into the bank of the Pigeon River at the waters edge. The top of the staff gauge will be included in the survey.

Liquid level measurements will be performed in accordance with WESTON SOPs and the ASTM Standard Method D 4750-87. Three sets of synoptic liquid level measurements will be obtained using an electronic water level probe, to assess short term consistency of groundwater elevations. The depth to groundwater and total depth of the well will be determined at the time of measurement. The water level and total depth will be measured to the nearest 0.01-foot from the top of the well casing. The surface water level in the Pigeon River will be recorded to the nearest 0.01 foot from the top of the temporary staff gauge. All downhole equipment will be decontaminated by washing in a solution of Alconox (a laboratory detergent) and potable water,



rinsed in potable water, and final-rinsed using commercially available distilled water. Liquid level information will be entered into the field log book.

#### **4.10 Groundwater Quality Tests**

One week after completion of development of the piezometers, WESTON will conduct one round of groundwater sampling. The sampling effort will include in-field measurements of specific conductivity, pH, and temperature. Groundwater samples will be collected for laboratory analysis for pH, conductivity, color, metals, hydroxide (as sodium hydroxide or calcium hydroxide), volatile organics, extractable organics, extractable base/neutral organics, and chlorinated phenolics. Table 1 presents a listing of the compounds to be included in the analytic suite. The parameters have been selected to reflect compounds potentially present in groundwater at the site, based on a review of materials used and process wastes generated at the Mill.

The field measurements and the groundwater samples for laboratory analysis for pH, conductance, and color will be collected at three depths from each piezometer, corresponding to the upper, middle and lower third of the water column. WESTON will use a peristaltic pump to retrieve groundwater for field testing and sample collection. After recording the depth to water in the piezometer with an electronic water level meter, a length of tygon tubing attached to straddle packer will be lowered into the midpoint of the upper third of the water column and threaded through a peristaltic pump set up near the head of the piezometer. The pump will be activated and a low flow rate (approximately 100 to 200 milliliters per minute) will be established. The pH, temperature and specific conductivity will be repeatedly monitored until the readings have stabilized, as defined by  $\pm 0.1$  pH units,  $\pm 10\%$  conductivity, and  $\pm 1^\circ$  Celsius over three successive readings, with at least 10% of one purge volume removed between each reading. Following stabilization, groundwater samples for laboratory analysis for pH, conductivity, and color will be collected in laboratory prepared bottles by directing the discharge from the pump into the appropriate bottles and filling so as to allow for an approximate 10% ullage.

The straddle packer will then be lowered to the next interval, and the process will be repeated, until samples for each depth have been collected. The tygon tubing will then be discarded. It is expected that the low flow rate of the pump will not disturb the vertical water column, thereby allowing for collection of depth specific samples and for purging of the standing water in the well in the immediate vicinity of the straddle packer.

At each piezometer, a groundwater sample will also be collected for laboratory analysis for metals, hydroxide (as sodium hydroxide or calcium hydroxide), volatile organics, extractable organics, extractable base/neutral organics, and chlorinated phenolics. The sample will be collected from the vertical interval exhibiting the most elevated pH and conductivity, as indicated by the field screening. The straddle packer will be decontaminated, new tygon tubing will be



attached to the packer, and a sample will be collected. Effluent from the pump will be directed into the laboratory prepared sample bottles and, excluding the sample for volatile organics, the bottles will be filled so as to allow an approximate 10% ullage. For the volatile organics sample, a Kemmer sampler will be lowered with stainless steel wire or monofilament line to the indicated sample collection depth, the sampler will be opened, allowed to fill, closed, retrieved, and the contents slowly poured into the appropriate sample container (two 40-milliliter glass VOA vials with screw caps and teflon lined septa, preserved with 2 milliliters of reagent grade hydrochloric acid). Care will be exercised to minimize aeration of the water during sampling. Each VOA vial will be visually examined after inverting and gently tapping to ensure that no air bubbles are present in the vials. The Kemmer sampler will be decontaminated between uses. The tygon tubing used for the peristaltic pump will be discarded.

In addition to the groundwater samples, several field quality assurance/quality control samples will be collected, including duplicate samples, trip blanks, field rinsate blanks, and distilled water blanks. Duplicate samples will be collected in the same manner as the primary sample, with the bottle for a given analysis filled first and the bottle for the duplicate filled next.

Trip blanks will be prepared by the laboratory, and will be analyzed for volatile organics only. The trip blanks will be shipped from the laboratory with the sample bottles, and will remain with the bottles until collection of the first sample, at which time the trip blanks will be transferred to the sample cooler where the collected samples are stored. Trip blanks will remain with the samples and accompany the samples during shipment to the laboratory.

Field rinsate blank samples will be collected by pumping or pouring reagent grade water over decontaminated sampling equipment. For parameters other than the volatile organics, the reagent grade water will be poured into a clean stainless steel container into which the straddle packer has been placed. The water will then be pumped through new tygon tubing into the appropriate sample container. For the volatile organics sample, the reagent grade water will be poured into the decontaminated Kemmer sampler, and the VOA vials will be filled from the water in the sampler.

The distilled water blank will be collected from the distilled water used as the final step in the equipment decontamination process. The distilled water will be poured directly from its container into the appropriate sample container.

All samples will be labeled in the field in indelible ink at the time of collection. Each label will include the site name, sample location, sample depth, sample number, date and time of sampling, analyses requested, preservative, and the sampler's initials. The same information will be recorded in the field log book, as well as relevant observations, readings, flow rates, etc.



Upon collection, all samples will be placed in plastic bags and set in a iced cooler. Prior to shipment to the laboratory, samples will be packed in the cooler with plastic bubble wrap or vermiculite.

Because of the short holding time for the color analysis (48 hours), samples will be shipped via overnight courier to the laboratory on the same day as collected. All samples will be maintained under chain-of-custody from the time of collection until receipt by the laboratory. Custody seals signed by the sampler will be placed on each sample cooler.

Groundwater generated during the purging and sampling activities will be temporarily containerized in 5-gallon buckets and transferred into a 55-gallon drum. It is anticipated that the purge water will be processed at the facility's wastewater treatment plant. Field activities will be recorded in the field log book.

#### **4.11 Rising-Head Permeability Tests**

Rising-head permeability tests will be performed on four piezometers distributed across the site. Tests will be conducted following WESTON SOPs and ASTM Standard Method D 4044-91. The tests will be conducted by introducing a solid slug of known dimensions into and below the water table. After water levels have stabilized, the slug will be quickly withdrawn, inducing a disturbance in the water column. Water levels will be repeatedly measured over the time period required for the well to re-stabilize. Water level data will be collected using an InSitu Hermit Data Logger and a pressure transducer. Additionally, water level measurements will be recorded using an electronic water level probe to supplement the Data Logger information. All downhole equipment will be decontaminated before the first test and between each test.

Data from the slug tests will be analyzed according to standard methods, as appropriate to the test conditions, including: Hvorslev (1951); Bouwer and Rice (1967); Cooper et al. (1967); or similar studies. The aquifer parameters calculated from the tests will include hydraulic conductivity and transmissivity.

#### **4.12 Pump Test**

A short duration (24-hour) pumping test will be performed at a recovery well installed at the site. The test is directed at evaluating the effectiveness of groundwater recovery over a variety of flow rates, and assessing hydrogeologic characteristics of the site. The test will be comprised of four phases:

- The first phase involves collection of background water levels in the recovery well and the temporary observation points. The background water level data will be collected over a minimum time period of 12 hours and will immediately precede the pumping test phases.



- The second phase includes a series (three minimum) of stepped drawdown tests to evaluate specific capacity, well yield, and pump setting requirements. The step tests are expected to be completed in several hours.
- Following recovery of water levels from the step test, the third phase will include pumping of the recovery well at an optimum flow rate established from a field review of the step test data. For the purposes of the test, the optimum pumping rate is the estimated maximum sustainable well yield at a constant flow rate. Pumping will continue for a minimum of eight hours. However, the test may be extended as necessary if influence in response to pumping is not observed in adjacent temporary observation points within the initial time frame.
- The fourth and final phase of the test will involve monitoring the recovery of groundwater in response to the cessation of pumping. Monitoring will continue for an estimated 16 hours after pumping has been terminated.

Pump test equipment will include an electric submersible pump, a flow regulator, a totalizing flow meter, an electronic water level probe, a Data Logger, and six pressure transducers. Pumped groundwater will be discharged into the facility's wastewater treatment plant.

Data from the pump test will be analyzed according to standard methods, as appropriate to the test conditions, including: Theis (1935); Cooper and Jacob (1946); Hantush and Jacobs (1955); or Kruseman and De Ridder (1979). Data acquired during the pumping test will assist in the evaluation of the groundwater recovery system and in developing an understanding of the hydrogeology of the site. Data analysis will include calculation of transmissivity, hydraulic conductivity, specific capacity, well yield, well efficiency, radius of influence, capture zone, and achievable pumping rates.

#### **4.13 Decontamination Procedures**

Equipment directly contacting subsurface soils, rock, and/or groundwater (i.e., water level probes, split-spoons, etc.) will be decontaminated before initial use and after each use to reduce the possibility of cross-contamination occurring between sampling locations. The equipment will be decontaminated by washing in a solution of Alconox and potable water, rinsed in potable water, and final rinsed with commercially available distilled water. Large down-hole equipment and materials (augers, air bits, well casings and screens, etc.) will be cleaned using a high pressure, hot-water sprayer. Spent decontamination fluids will be collected and containerized in labeled 55-gallon steel drums. It is anticipated that decontamination fluids will be processed at the facility's wastewater treatment plant.



## **SECTION 5**

### **REPORTING**

Upon completion of the review and analysis of the data, a report will be generated. The report will include a summary of interim responses, a summary of relevant current and historical site data (operations and materials), identification of subsurface structures which could act as preferential migration pathways, description of the field methods employed, analysis of geologic and hydrogeologic data (including cross-sections, groundwater flow maps, slug test data, pump test data, and groundwater flow modeling), a summary of the field screening data, a summary of the groundwater chemical analytical data, interpretation and analysis of the groundwater chemical analytical data, and an evaluation of potential source areas. Conclusions will be drawn based on analysis and integration of the site records review, the hydrogeologic data, soil screening data, and groundwater chemical analytical data. Recommendations for additional investigation, including the potential need for further evaluation for potential receptors and additional groundwater sampling and analysis, will be developed, as warranted by the findings of the investigation.



## **SECTION 6**

### **SCHEDULE**

Upon approval of this assessment plan, efforts directed at implementation of the plan will commence. The estimated total duration to fully execute this assessment plan is 168 calendar days. Scheduling of the interim responses has been discussed in Section 3. A breakdown of the implementation schedule is presented below.

#### **TASK 1 SUBCONTRACTOR PROCUREMENT**

This task will begin upon approval of the assessment plan. Activities under this task include development of subcontractor procurement specifications (drilling services and elevation/horizontal survey), distribution of the specifications to prospective subcontractors, preparation of submittals by prospective subcontractors, evaluation and selection of subcontractors, and formal contracting of the selected subcontractors. The estimated duration of this task is 14 calendar days.

#### **TASK 2 EXECUTION OF TECHNICAL SCOPE OF WORK**

This task will begin upon completion of formal contracting of the selected subcontractors. This task involves execution of the previously discussed elements of the technical scope of work, including: mobilization of technical personnel and subcontractors to the site; review of site records for information on current and past site conditions (processes, materials, incidents, subsurface structures, etc.); drilling and installation of the piezometers and pump test observation points; aquifer testing; measurement of liquid levels; and collection of groundwater samples. The estimated duration to execute the technical scope of work is 70 calendar days. This schedule includes: an estimated two weeks for the drilling subcontractor mobilization; an estimated two weeks for drilling activities (to include drilling, installation, and development of piezometers and observation points); a one week period for piezometer equilibration; and an estimated two weeks for measurement of liquid levels, collection of groundwater samples, performance of the vertical and horizontal survey, and execution of the recovery well pump test and piezometer slug tests. Completion of analyses by the laboratory will require an estimated three weeks.

#### **TASK 3 REPORTING**

This task includes preparation of the report, as discussed in Section 4. Preparation of the report will begin upon demobilization from the field. The draft report will be submitted to Champion an estimated 35 calendar days after receipt of the laboratory analytical data. Upon receipt of Champion's comments on the draft report, WESTON will revise the draft report. The final



report will be released to Champion 14 calendar days after receipt of the draft report comments. Upon authorization from Champion, WESTON will release the final report to DEHNR. Assuming WESTON receives Champion's comments on the draft report 28 calendar days after Champion's receipt of the draft report, and WESTON receives Champion's approval for release of the final report to DEHNR seven calendar days after Champion's receipt of the final report, the final report will be submitted to DEHNR 84 calendar days after WESTON's receipt of the laboratory analytical data.



## ICIS Facility Report

NPDES ID	NC0000272
FRS Facility Site ID	270597
Permit Name	Blue Ridge Paper Products Inc
City	CANTON

Permit Type Desc	NPDES Individual Permit
Curr. Major Minor Status	Major
Permit Status Desc	Expired
Issuing Agency Type Desc	State

Issue Date	5/26/10
Effective Date	7/1/10
Expiration Date	6/30/15

Latitude in Decimal Degrees	35.536778
Longitude in Decimal Degrees	-82.846917
Horizontal Accuracy Measure	
Geometric Type Desc	

Horizontal Collect Method Desc	
Horizontal Reference Datum Desc	
Source Map Scale Number	
Reference Point Desc	

Total App. Design Flow (MGD)	29.9
Total Actual Average Flow (MGD)	
State Water Body	
State Water Body Name	

Location Address	175 MAIN ST
Supplemental Address	PO BOX 4000
City	CANTON
State Code	NC
Zip	28716

DMR Cognizant Official	
DMR Cognizant Offcl Telephone	
Primary Permit SIC Desc	Paper Mills

Component Type Desc

### Inspections in Last 5 Years

Actual End Date	Compliance Monitoring Type Desc	Agency Type Desc
5/14/03	Audit	State
6/2/04	Evaluation	State
10/19/04	Biomonitoring	State
5/19/05	Evaluation	State
10/31/05	Evaluation	State

## ICIS Facility Report

Actual End Date	Compliance Monitoring Type Desc	Agency Type Desc
3/16/06	Evaluation	State
8/22/06	Biomonitoring	State
10/17/06	Biomonitoring	State
11/27/06	Evaluation	State
9/19/07	Evaluation	State
1/8/08	Evaluation	State
5/8/08	Evaluation	State
1/1/09	Diagnostic	State
9/24/09	Evaluation	State
6/8/10	Biomonitoring	State
6/27/11	Evaluation	State
7/27/11	Evaluation	State
12/13/12	Evaluation	State
4/16/14	Evaluation	State

### Enforcement in Last 5 Years

Issued By	EA Type Desc	Final Order Issued Date	Informal Achieved Date
EPA	CWA 309G2B AO For Class II Penalties	10/22/91	
State	Letter of Violation/ Warning Letter		1/13/06
State	Letter of Violation/ Warning Letter		1/13/09
State	Notice of Violation		11/5/13

## ICIS Facility Report

NPDES ID	NCG120098
FRS Facility Site ID	270597
Permit Name	Evergreen Packaging
City	CANTON

Permit Type Desc	General Permit Covered Facility
Curr. Major Minor Status	Minor
Permit Status Desc	Effective
Issuing Agency Type Desc	State

Issue Date	5/24/13
Effective Date	5/24/13
Expiration Date	10/31/17

Latitude in Decimal Degrees	35.5514
Longitude in Decimal Degrees	-82.8714
Horizontal Accuracy Measure	
Geometric Type Desc	

Horizontal Collect Method Desc	
Horizontal Reference Datum Desc	
Source Map Scale Number	
Reference Point Desc	

Total App. Design Flow (MGD)	0
Total Actual Average Flow (MGD)	
State Water Body	
State Water Body Name	

Location Address	175 MAIN ST
Supplemental Address	PO BOX 4000
City	CANTON
State Code	NC
Zip	28716

DMR Cognizant Official	
DMR Cognizant Offcl Telephone	
Primary Permit SIC Desc	

Component Type Desc

### Inspections in Last 5 Years

Actual End Date	Compliance Monitoring Type Desc	Agency Type Desc
10/31/13	Evaluation	State

### Enforcement in Last 5 Years

ICIS Facility Report

Issued By	EA Type Desc	Final Order Issued Date	Informal Achieved Date

## ICIS Facility Report

NPDES ID	NCS000105
FRS Facility Site ID	270597
Permit Name	Blue Ridge Paper Products Inc
City	CANTON

Permit Type Desc	NPDES Individual Permit
Curr. Major Minor Status	Minor
Permit Status Desc	Expired
Issuing Agency Type Desc	State

Issue Date	7/14/08
Effective Date	8/1/08
Expiration Date	7/31/13

Latitude in Decimal Degrees	35.536778
Longitude in Decimal Degrees	-82.846917
Horizontal Accuracy Measure	50
Geometric Type Desc	

Horizontal Collect Method Desc	
Horizontal Reference Datum Desc	
Source Map Scale Number	
Reference Point Desc	

Total App. Design Flow (MGD)	0
Total Actual Average Flow (MGD)	
State Water Body	
State Water Body Name	

Location Address	175 MAIN ST
Supplemental Address	PO BOX 4000
City	CANTON
State Code	NC
Zip	28716

DMR Cognizant Official	
DMR Cognizant Offcl Telephone	
Primary Permit SIC Desc	Paper Mills

Component Type Desc

### Inspections in Last 5 Years

Actual End Date	Compliance Monitoring Type Desc	Agency Type Desc

### Enforcement in Last 5 Years

## ICIS Facility Report

Issued By	EA Type Desc	Final Order Issued Date	Informal Achieved Date

## DMR Summary

**Permit NC0000272**

Permit Name	Version Nmbr	Curr. Major Minor Status	Issue Date	Effective Date	Expiration Date
Blue Ridge Paper Products Inc	0	Major	5/26/10	7/1/10	6/30/15

**Version # 0**

**Outfall 0011**

**00010 Temperature, water deg. centigrade / Location 1 / Season 0 / Base**

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	GRAB	Five Days per Week

Limit			
Limit Unit Desc	Degrees Centigrade	Degrees Centigrade	Degrees Centigrade
Statistical Base	MINIMUM	AVERAGE	MAXIMUM
Limit Value			
DMR Values			
1/31/11	21.6	24.6354	28.6
2/28/11	23.6	27.0607	31.3
3/31/11	26.5	28.2129	30.9
4/30/11	27.6	32.3133	35.4
5/31/11	19.8	31.058	37.3
6/30/11	32.1	34.4933	36.4
7/31/11	32.1	35.4225	37.6
8/31/11	31.6	34.9064	36.9
9/30/11	29.1	32.8566	35.5
10/31/11	25.1	29.0935	31.9
11/30/11	24.9	27.7333	30.6
12/31/11	24.3	27.4096	30.6
1/31/12	23.4	27.729	32.6
2/29/12	25.7	30.0275	33.4
3/31/12	30.1	32.629	34.9
4/30/12	25.1	31.9133	35.3
5/31/12	27.8	33.6161	37.1
6/30/12	28.6	34.0433	36.4
7/31/12	32.3	34.8935	36.3

**00070 Turbidity / Location 1 / Season 0 / Base**

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	GRAB	Twice per Month

Limit			
Limit Unit Desc	Nephelometric Turb	Nephelometric Turb	Nephelometric Turb
Statistical Base	MINIMUM	AVERAGE	MAXIMUM
Limit Value			
DMR Values			
1/31/11	1.5	2.4	3.3
2/28/11	2.9	3.1	3.3
3/31/11	1	1.95	2.9
4/30/11	2.1	9.25	16.4
5/31/11	4.9	6.95	9
6/30/11	14.4	14.4	14.4
7/31/11	1.3	4	6.7
8/31/11			

## DMR Summary

Permit NC0000272

Version # 0

Outfall 0011

### 00070 Turbidity / Location 1 / Season 0 / Base

DMR Values			
9/30/11			
10/31/11			
11/30/11			
12/31/11			
1/31/12			
2/29/12			
3/31/12			
4/30/12			
5/31/12			
6/30/12			
7/31/12			

### 00084 Color / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	COMPOS	Five Days per Week

Limit		
Limit Unit Desc	Pounds per Day	Pounds per Day
Statistical Base	30DA AVG	DAILY MX
Limit Value	52000	105250
DMR Values		
1/31/11	36311	48448
2/28/11	34313	56290
3/31/11	37629	55538
4/30/11	33587	51068
5/31/11	28771	59609
6/30/11	35573	43501
7/31/11	32458	52559
8/31/11	28647	42302
9/30/11	32837	43394
10/31/11	40339	62337
11/30/11	38782	59251
12/31/11	43695	95748
1/31/12	36450	52402
2/29/12	36819	51212
3/31/12	37625	73436
4/30/12	33366	52719
5/31/12	37861	101058
6/30/12	30536	41658
7/31/12	34671	58204

### 00094 Conductivity / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	GRAB	Five Days per Week

Limit			
Limit Unit Desc	micromhos per cm	micromhos per cm	micromhos per cm
Statistical Base	MINIMUM	AVERAGE	MAXIMUM
Limit Value			

## DMR Summary

Permit NC0000272

Version # 0

Outfall 0011

### 00094 Conductivity / Location 1 / Season 0 / Base

DMR Values			
1/31/11	1809	2458	3335
2/28/11	2035	2370	3188
3/31/11	1161	2409	3380
4/30/11	1640	2442	3987
5/31/11	1264	2447	4493
6/30/11	1836	2535	3220
7/31/11	1903	2229	2962
8/31/11	2250	2788	3487
9/30/11	1566	2727	3514
10/31/11	1816	2296	3404
11/30/11	2147	2545	3055
12/31/11	2207	2600	3262
1/31/12	2375	2776	3365
2/29/12	2104	2569	3025
3/31/12	2123	2773	3983
4/30/12	2102	2480	2964
5/31/12	1950	2629	5295
6/30/12	1968	2231	2602
7/31/12	2001	2357	3218

### 00300 Oxygen, dissolved [DO] / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	GRAB	Five Days per Week

Limit			
Limit Unit Desc	Milligrams per Liter	Milligrams per Liter	Milligrams per Liter
Statistical Base	DAILY MN	AVERAGE	MAXIMUM
Limit Value	6		
DMR Values			
1/31/11	9.6	10.0709	11.4
2/28/11	9	9.63214	11.6
3/31/11	9	9.70322	11.3
4/30/11	7.53	8.91	9.85
5/31/11	8.6	9.47419	11.5
6/30/11	12.4	14.8	21.4
7/31/11	12.9	16.4354	19.5
8/31/11	11.4	14.6193	18.5
9/30/11	11.5	14.3366	15.8
10/31/11	12.5	15.5354	18.3
11/30/11	9.5	12.1166	18.5
12/31/11	9.8	11.3129	13.8
1/31/12	9.9	11.1258	13.9
2/29/12	9.9	10.8172	12.4
3/31/12	9.8	11.0032	13.4
4/30/12	9.4	10.8066	12.1
5/31/12	6.7	9.13871	12.2
6/30/12	7.8	10.5966	14.2
7/31/12	10.9	12.5451	14.8

### 00310 BOD, 5-day, 20 deg. C / Location 1 / Season 0 / Base

# DMR Summary

Permit NC0000272

Version # 0

Outfall 0011

00310 BOD, 5-day, 20 deg. C / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	COMPOS	Five Days per Week

Limit		
Limit Unit Desc	Pounds per Day	Pounds per Day
Statistical Base	30DA AVG	DAILY MX
Limit Value	3205	10897
DMR Values		
1/31/11	1932	3804
2/28/11	1139	1701
3/31/11	1433	2408
4/30/11	1141	2356
5/31/11	1074	1666
6/30/11	1876	5338
7/31/11	1150	1921
8/31/11	866.806	1661
9/30/11	903.833	1616
10/31/11	1478	2725
11/30/11	1835	4272
12/31/11	1138	2190
1/31/12	1234	2638
2/29/12	1422	2175
3/31/12	1475	3226
4/30/12	1338	1956
5/31/12	2386	11901
6/30/12	1033	1813
7/31/12	1222	1875

00340 Oxygen demand, chem. [high level] [COD] / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	COMPOS	Weekly

Limit			
Limit Unit Desc	Milligrams per Liter	Milligrams per Liter	Milligrams per Liter
Statistical Base	MINIMUM	AVERAGE	MAXIMUM
Limit Value			
DMR Values			
1/31/11	86	110	144
2/28/11	90	118	161
3/31/11	97	109.2	117
4/30/11	44	78.25	102
5/31/11	27	72.75	124
6/30/11	105	141.8	170
7/31/11	78	100	140
8/31/11	75	135.4	287
9/30/11	86	107.75	124
10/31/11	91	121	156
11/30/11	111	147	199
12/31/11	98	129.25	203
1/31/12	65	179.5	423
2/29/12	89	113.6	141

## DMR Summary

Permit NC0000272

Version # 0

Outfall 0011

00340 Oxygen demand, chem. [high level] [COD] / Location 1 / Season 0 / Base

DMR Values			
3/31/12	103	113	128
4/30/12	89	127.25	198
5/31/12	52	145	400
6/30/12	73	99.5	129
7/31/12	78	99.5	134

00400 pH / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	GRAB	Five Days per Week

Limit		
Limit Unit Desc	Standard Units	Standard Units
Statistical Base	DAILY MN	DAILY MX
Limit Value	6	9
DMR Values		
1/31/11	7.5	8
2/28/11	7.4	8.1
3/31/11	7.5	7.9
4/30/11	7.5	8.3
5/31/11	7.5	8.4
6/30/11	7.5	7.9
7/31/11	7.6	7.8
8/31/11	7.6	7.8
9/30/11	7.6	7.9
10/31/11	7.5	7.9
11/30/11	7.7	8.6
12/31/11	7.4	8.1
1/31/12	7.5	8
2/29/12	7.4	8
3/31/12	7.6	7.9
4/30/12	7.6	8.4
5/31/12	7.4	8.2
6/30/12	7.6	7.9
7/31/12	7.6	8.1

00530 Solids, total suspended / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	COMPOS	Five Days per Week

Limit		
Limit Unit Desc	Pounds per Day	Pounds per Day
Statistical Base	30DA AVG	DAILY MX
Limit Value	12549	49560
DMR Values		
1/31/11	3487	6921
2/28/11	3099	4128
3/31/11	3518	5447
4/30/11	3688	6878
5/31/11	4497	9111

## DMR Summary

Permit NC0000272

Version # 0

Outfall 0011

00530 Solids, total suspended / Location 1 / Season 0 / Base

DMR Values		
6/30/11	5743	10646
7/31/11	2522	4131
8/31/11	3070	6610
9/30/11	1992	3993
10/31/11	2992	5582
11/30/11	4172	12734
12/31/11	1925	6004
1/31/12	3184	8753
2/29/12	2740	3989
3/31/12	2410	6963
4/30/12	2647	7008
5/31/12	4588	29573
6/30/12	1891	3054
7/31/12	2067	3664

00600 Nitrogen, total [as N] / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	COMPOS	Monthly

Limit			
Limit Unit Desc	Milligrams per Liter	Milligrams per Liter	Milligrams per Liter
Statistical Base	MINIMUM	AVERAGE	MAXIMUM
Limit Value			
DMR Values			
1/31/11	.6	.6	.6
2/28/11	2.8	2.8	2.8
3/31/11	1.1	1.1	1.1
4/30/11	1.5	1.5	1.5
5/31/11	2.5	2.5	2.5
6/30/11	1.6	1.6	1.6
7/31/11	2.1	2.1	2.1
8/31/11	1.6	1.6	1.6
9/30/11	1.4	1.4	1.4
10/31/11	2.2	2.2	2.2
11/30/11	1.1	1.1	1.1
12/31/11	2.2	2.2	2.2
1/31/12	3.2	3.2	3.2
2/29/12	.81	.81	.81
3/31/12	1.5	1.5	1.5
4/30/12	1.8	1.8	1.8
5/31/12	2.8	2.8	2.8
6/30/12	1.9	1.9	1.9
7/31/12	1.8	1.8	1.8

00610 Nitrogen, ammonia total [as N] / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	COMPOS	Five Days per Week

## DMR Summary

Permit NC0000272

Version # 0

Outfall 0011

00610 Nitrogen, ammonia total [as N] / Location 1 / Season 0 / Base

Limit			
Limit Unit Desc	Milligrams per Liter	Milligrams per Liter	Milligrams per Liter
Statistical Base	MINIMUM	AVERAGE	MAXIMUM
Limit Value			
DMR Values			
1/31/11			
2/28/11		.289464	2.718
3/31/11		.121323	1.051
4/30/11		.015367	.362
5/31/11		.426355	4.252
6/30/11		.201533	3.459
7/31/11		.023387	.288
8/31/11		.245419	4.252
9/30/11		.2315	4.12
10/31/11		.278581	4.252
11/30/11			
12/31/11		.71129	21
1/31/12	.1	.110323	.18
2/29/12	.1	.119655	.36
3/31/12	.1	.120968	.22
4/30/12	.1	.145	.34
5/31/12	.1	.128065	.42
6/30/12	.1	.129	.3
7/31/12	.1	.224839	.82

00665 Phosphorus, total [as P] / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	COMPOS	Monthly

Limit			
Limit Unit Desc	Milligrams per Liter	Milligrams per Liter	Milligrams per Liter
Statistical Base	MINIMUM	AVERAGE	MAXIMUM
Limit Value			
DMR Values			
1/31/11	.1	.1	.1
2/28/11	.88	.88	.88
3/31/11	.9	.9	.9
4/30/11	.34	.34	.34
5/31/11	.35	.35	.35
6/30/11	.65	.65	.65
7/31/11	.75	.75	.75
8/31/11	.75	.75	.75
9/30/11	.55	.55	.55
10/31/11	.69	.69	.69
11/30/11	.61	.61	.61
12/31/11	.77	.77	.77
1/31/12	.58	.58	.58
2/29/12	.61	.61	.61
3/31/12	.52	.52	.52
4/30/12	.33	.33	.33
5/31/12	.57	.57	.57

## DMR Summary

Permit NC0000272

Version # 0

Outfall 0011

**00665 Phosphorus, total [as P] / Location 1 / Season 0 / Base**

DMR Values			
6/30/12	.9	.9	.9
7/31/12	.39	.39	.39

**00900 Hardness, total [as CaCO3] / Location 1 / Season 0 / Base**

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	COMPOS	Quarterly

Limit			
Limit Unit Desc	Milligrams per Liter	Milligrams per Liter	Milligrams per Liter
Statistical Base	MINIMUM	AVERAGE	MAXIMUM
Limit Value			
DMR Values			
3/31/11	144	144	144
6/30/11	89.2	89.2	89.2
9/30/11	116	116	116
12/31/11	122	122	122
3/31/12	123	123	123
6/30/12	108	108	108

**01092 Zinc, total [as Zn] / Location 1 / Season 0 / Base**

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	COMPOS	Quarterly

Limit			
Limit Unit Desc	Micrograms per Lite	Micrograms per Lite	Micrograms per Lite
Statistical Base	MINIMUM	AVERAGE	MAXIMUM
Limit Value			
DMR Values			
3/31/11	29.4	29.4	29.4
6/30/11	25	25	25
9/30/11	14.4	14.4	14.4
12/31/11	19.3	19.3	19.3
3/31/12	23.3	23.3	23.3
6/30/12	16.8	16.8	16.8

**01147 Selenium, total [as Se] / Location 1 / Season 0 / Base**

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	COMPOS	Annual

Limit			
Limit Unit Desc	Micrograms per Lite	Micrograms per Lite	Micrograms per Lite
Statistical Base	MINIMUM	AVERAGE	MAXIMUM
Limit Value			
DMR Values			
1/31/11	NODI=8	NODI=8	NODI=8
2/28/11	NODI=8	NODI=8	NODI=8
3/31/11	NODI=8	NODI=8	NODI=8
4/30/11	NODI=8	NODI=8	NODI=8

## DMR Summary

Permit NC0000272

Version # 0

Outfall 0011

01147 Selenium, total [as Se] / Location 1 / Season 0 / Base

DMR Values			
5/31/11	NODI=8	NODI=8	NODI=8
6/30/11	NODI=8	NODI=8	NODI=8
7/31/11			
8/31/11	NODI=8	NODI=8	NODI=8
9/30/11	NODI=8	NODI=8	NODI=8
10/31/11	NODI=8	NODI=8	NODI=8
11/30/11	NODI=8	NODI=8	NODI=8
12/31/11	NODI=8	NODI=8	NODI=8
1/31/12	NODI=8	NODI=8	NODI=8
2/29/12	NODI=8	NODI=8	NODI=8
3/31/12	NODI=8	NODI=8	NODI=8
4/30/12	NODI=8	NODI=8	NODI=8
5/31/12	NODI=8	NODI=8	NODI=8
6/30/12	NODI=8	NODI=8	NODI=8
7/31/12	NODI=8	NODI=8	NODI=8

31616 Coliform, fecal MF, MFC broth, 44.5 C / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	GRAB	Weekly

Limit			
Limit Unit Desc	Number per 100 Mil	Number per 100 Mil	Number per 100 Mil
Statistical Base	MINIMUM	MO GEOMN	DAILY MX
Limit Value		200	400
DMR Values			
1/31/11	2	12.2392	51
2/28/11	1	4.03089	132
3/31/11	1	1.64375	4
4/30/11	1	8.54039	20
5/31/11	2	7.23324	11
6/30/11	1	1.93433	7
7/31/11	3	13.4535	120
8/31/11	3	19.4479	240
9/30/11	2	2.91295	6
10/31/11	2	12.4212	240
11/30/11	3	8.18909	31
12/31/11	3	11.5363	164
1/31/12	3	5.49104	26
2/29/12	3	3.4641	4
3/31/12	3	6.1793	9
4/30/12	4	14.1407	49
5/31/12	6	15.0229	34
6/30/12	4	41.7998	477
7/31/12	6	26.9318	144

34675 2,3,7,8-Tetrachlorodibenzo-p-dioxin / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	COMPOS	Annual

## DMR Summary

Permit NC0000272

Version # 0

Outfall 0011

34675 2,3,7,8-Tetrachlorodibenzo-p-dioxin / Location 1 / Season 0 / Base

Limit			
Limit Unit Desc	Picograms per Liter	Picograms per Liter	Picograms per Liter
Statistical Base	MINIMUM	30DA AVG	DAILY MX
Limit Value		.04	.06
<b>DMR Values</b>			
1/31/11	NODI=8	NODI=8	NODI=8
2/28/11	NODI=8	NODI=8	NODI=8
3/31/11	NODI=8	NODI=8	NODI=8
4/30/11	NODI=8	NODI=8	NODI=8
5/31/11	NODI=8	NODI=8	NODI=8
6/30/11	NODI=8	NODI=8	NODI=8
7/31/11	NODI=8	NODI=8	NODI=8
8/31/11			
9/30/11	NODI=8	NODI=8	NODI=8
10/31/11	NODI=8	NODI=8	NODI=8
11/30/11	NODI=8	NODI=8	NODI=8
12/31/11	NODI=8	NODI=8	NODI=8
1/31/12	NODI=8	NODI=8	NODI=8
2/29/12	NODI=8	NODI=8	NODI=8
3/31/12	NODI=8	NODI=8	NODI=8
4/30/12	NODI=8	NODI=8	NODI=8
5/31/12	NODI=8	NODI=8	NODI=8
6/30/12	NODI=8	NODI=8	NODI=8
7/31/12			

39032 Pentachlorophenol / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	COMPOS	Quarterly

Limit		
Limit Unit Desc	Pounds per Day	Pounds per Day
Statistical Base	AVERAGE	DAILY MX
Limit Value		4.9
<b>DMR Values</b>		
1/31/11	NODI=8	NODI=8
2/28/11	NODI=8	NODI=8
3/31/11	NODI=8	NODI=8
4/30/11	NODI=8	NODI=8
5/31/11	NODI=8	NODI=8
6/30/11	NODI=8	NODI=8
7/31/11	NODI=8	NODI=8
8/31/11	NODI=8	NODI=8
9/30/11	NODI=8	NODI=8
10/31/11	NODI=8	NODI=8
11/30/11	NODI=8	NODI=8
12/31/11	NODI=8	NODI=8
1/31/12	NODI=8	NODI=8
2/29/12	NODI=8	NODI=8
3/31/12	NODI=8	NODI=8
4/30/12	NODI=8	NODI=8
5/31/12	NODI=8	NODI=8

## DMR Summary

Permit NC0000272

Version # 0

Outfall 0011

39032 Pentachlorophenol / Location 1 / Season 0 / Base

DMR Values		
6/30/12	NODI=8	NODI=8
7/31/12	NODI=8	NODI=8

50050 Flow, in conduit or thru treatment plant / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	Recorder (auto)	Continuous

Limit		
Limit Unit Desc	Million Gallons per	Million Gallons per
Statistical Base	30DA AVG	MAXIMUM
Limit Value	29.9	
DMR Values		
1/31/11	24.8248	27.27
2/28/11	25.0742	27.15
3/31/11	24.779	27.98
4/30/11	25.6876	28.14
5/31/11	22.4957	28.01
6/30/11	25.147	27
7/31/11	25.4832	28.07
8/31/11	26.1661	27.72
9/30/11	25.9406	28.14
10/31/11	26.8338	29.72
11/30/11	26.839	31.16
12/31/11	26.53	28.91
1/31/12	26.5983	29.12
2/29/12	26.5389	29.8
3/31/12	26.3351	29.62
4/30/12	27.1963	32.32
5/31/12	26.8622	29.92
6/30/12	26.56	28.21
7/31/12	27.9644	30.88

79855 Adsorbable organic halides [AOX] / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	COMPOS	Weekly

Limit		
Limit Unit Desc	Pounds per Day	Pounds per Day
Statistical Base	30DA AVG	DAILY MX
Limit Value	1556	2822
DMR Values		
1/31/11	253.86	295
2/28/11	201.45	224.9
3/31/11	370.15	604.4
4/30/11	187.5	235.2
5/31/11	131.7	273.5
6/30/11	270.225	465.7
7/31/11	292.475	321.5
8/31/11	276.18	425.5

## DMR Summary

Permit NC0000272

Version # 0

Outfall 0011

79855 Adsorbable organic halides [AOX] / Location 1 / Season 0 / Base

DMR Values		
9/30/11	267.275	340.4
10/31/11	317.22	426.6
11/30/11	356.525	420.5
12/31/11	259.725	303.2
1/31/12	318.7	414.8
2/29/12	278.225	297.9
3/31/12	303.775	331
4/30/12	298.36	417.2
5/31/12	275.675	391.6
6/30/12	233.625	254.8
7/31/12	368.92	521.2

81848 Trichlorophenol / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	COMPOS	Quarterly

Limit		
Limit Unit Desc	Pounds per Day	Pounds per Day
Statistical Base	AVERAGE	DAILY MX
Limit Value		30.6
DMR Values		
1/31/11	NODI=8	NODI=8
2/28/11	NODI=8	NODI=8
3/31/11	NODI=8	NODI=8
4/30/11	NODI=8	NODI=8
5/31/11	NODI=8	NODI=8
6/30/11	NODI=8	NODI=8
7/31/11	NODI=8	NODI=8
8/31/11	NODI=8	NODI=8
9/30/11	NODI=8	NODI=8
10/31/11	NODI=8	NODI=8
11/30/11	NODI=8	NODI=8
12/31/11	NODI=8	NODI=8
1/31/12	NODI=8	NODI=8
2/29/12	NODI=8	NODI=8
3/31/12	NODI=8	NODI=8
4/30/12	NODI=8	NODI=8
5/31/12	NODI=8	NODI=8
6/30/12	NODI=8	NODI=8
7/31/12	NODI=8	NODI=8

TGP3B Pass/Fail Static Renewal 7 Day Chronic Ceriodaphnia / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	COMPOS	Quarterly

Limit			
Limit Unit Desc	Pass=0; Fail=1	Pass=0; Fail=1	Pass=0; Fail=1
Statistical Base	MINIMUM	AVERAGE	SINGSAMP
Limit Value			1

## DMR Summary

Permit NC0000272

Version # 0

Outfall 0011

TGP3B Pass/Fail Static Renewal 7 Day Chronic Ceriodaphnia / Location 1 / Season 0 / Base

DMR Values			
3/31/11	1	1	1
6/30/11	1	1	1
9/30/11	1	1	1
12/31/11	1	1	1
3/31/12	1	1	1
6/30/12	1	1	1

THP3B Chv Statre 7Day Chronic Ceriodaphnia / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15	COMPOS	Quarterly

Limit			
Limit Unit Desc	Percent	Percent	Percent
Statistical Base	DAILY MN	AVERAGE	MAXIMUM
Limit Value	90		
DMR Values			
1/31/11	NODI=8	NODI=8	NODI=8
2/28/11	NODI=8	NODI=8	NODI=8
3/31/11	100	100	100
4/30/11	NODI=8	NODI=8	NODI=8
5/31/11	NODI=8	NODI=8	NODI=8
6/30/11	100	100	100
7/31/11	NODI=8	NODI=8	NODI=8
8/31/11	NODI=8	NODI=8	NODI=8
9/30/11	100	100	100
10/31/11	NODI=8	NODI=8	NODI=8
11/30/11	NODI=8	NODI=8	NODI=8
12/31/11	100	100	100
1/31/12	NODI=8	NODI=8	NODI=8
2/29/12	NODI=8	NODI=8	NODI=8
3/31/12	100	100	100
4/30/12	NODI=8	NODI=8	NODI=8
5/31/12	NODI=8	NODI=8	NODI=8
6/30/12	100	100	100
7/31/12	NODI=8	NODI=8	NODI=8

Outfall 001M

00010 Temperature, water deg. centigrade / Location 1 / Season 9 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15		

Limit	
Limit Unit Desc	Degrees Centigrade
Statistical Base	DAILY MX
Limit Value	
DMR Values	
8/31/12	36
9/30/12	37
10/31/12	34.2

## DMR Summary

Permit NC0000272

Version # 0

Outfall 001M

00010 Temperature, water deg. centigrade / Location 1 / Season 9 / Base

DMR Values	
11/30/12	32.9
12/31/12	29.5
1/31/13	30.6
2/28/13	28
3/31/13	29.9
4/30/13	32
5/31/13	35.6
6/30/13	35.1
7/31/13	33.9
8/31/13	34.7
9/30/13	34.6
10/31/13	32.9
11/30/13	31.6
12/31/13	30.8
1/31/14	28.1
2/28/14	30.9
3/31/14	31
4/30/14	31.8
5/31/14	33.2
6/30/14	35.3
7/31/14	36
8/31/14	35.6
9/30/14	35.4
10/31/14	32.8
11/30/14	29.9
12/31/14	30
1/31/15	29.6
2/28/15	29.1
3/31/15	31.7
4/30/15	32.3
5/31/15	33.5
6/30/15	35.5
7/31/15	36.6
8/31/15	36.7
9/30/15	
10/31/15	
11/30/15	
12/31/15	

00084 Color / Location 1 / Season 9 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15		

Limit		
Limit Unit Desc	Pounds per Day	Pounds per Day
Statistical Base	30DA AVG	DAILY MX
Limit Value	52000	105250
DMR Values		
8/31/12	32999.4516	51208
9/30/12	36272.2666	65346

## DMR Summary

Permit NC0000272

Version # 0

Outfall 001M

00084 Color / Location 1 / Season 9 / Base

DMR Values		
10/31/12	29828.9032	46990
11/30/12	41932.9333	77487
12/31/12	29558.3225	47576
1/31/13	32213.387	53777
2/28/13	34350.5	44756
3/31/13	33561.387	59142
4/30/13	40674.7	77360
5/31/13	29615.1935	51604
6/30/13	35640.3666	45488
7/31/13	41606.4193	62234
8/31/13	34232.4838	42794
9/30/13	35955.8	45839
10/31/13	40091.0645	51702
11/30/13	43042.8333	60773
12/31/13	35363.5161	50383
1/31/14	47324.8387	129856
2/28/14	33599.2857	43017
3/31/14	39259.6774	52555
4/30/14	35421.8333	65631
5/31/14	31924.0645	43010
6/30/14	33369.8666	45820
7/31/14	31006.5806	42766
8/31/14	36226.8387	46058
9/30/14	33745.8	64731
10/31/14	37788.8064	48045
11/30/14	39984.1666	56928
12/31/14	34069.9354	48727
1/31/15	31828.7096	48569
2/28/15	38245.9642	52712
3/31/15	36066.6129	48295
4/30/15	38657.4	53580
5/31/15	30848.4193	42135
6/30/15	39013.6	59765
7/31/15	35488.9354	45145
8/31/15	37030.258	59611
9/30/15		
10/31/15		
11/30/15		
12/31/15		

00094 Conductivity / Location 1 / Season 9 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15		

Limit	
Limit Unit Desc	microhm/cm-cm
Statistical Base	DAILY MAX
Limit Value	
Unit Value	
8/31/12	3000

## DMR Summary

Permit NC0000272

Version # 0

Outfall 001M

00094 Conductivity / Location 1 / Season 9 / Base

DMR Values	
9/30/12	3332
10/31/12	3961
11/30/12	3432
12/31/12	4158
1/31/13	3052
2/28/13	3019
3/31/13	3333
4/30/13	3998
5/31/13	2963
6/30/13	4091
7/31/13	3007
8/31/13	3484
9/30/13	3012
10/31/13	3438
11/30/13	3452
12/31/13	2997
1/31/14	4254
2/28/14	2604
3/31/14	2767
4/30/14	4641
5/31/14	3063
6/30/14	2403
7/31/14	2740
8/31/14	3542
9/30/14	3342
10/31/14	4158
11/30/14	3241
12/31/14	2865
1/31/15	3469
2/28/15	4332
3/31/15	3602
4/30/15	3741
5/31/15	4726
6/30/15	3087
7/31/15	2766
8/31/15	3093
9/30/15	
10/31/15	
11/30/15	
12/31/15	

00300 Oxygen, dissolved [DO] / Location 1 / Season 9 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15		

Limit	
Limit Unit Desc	Milligrams per Liter
Statistical Base	Calc. V MVA
Limit Value	5
DMR Values	

## DMR Summary

Permit NC0000272

Version # 0

Outfall 001M

00300 Oxygen, dissolved [DO] / Location 1 / Season 9 / Base

DMR Values	
8/31/12	10.6
9/30/12	10.3
10/31/12	8.7
11/30/12	8.7
12/31/12	8.8
1/31/13	8.4
2/28/13	8.4
3/31/13	8.2
4/30/13	8
5/31/13	7.1
6/30/13	7.8
7/31/13	7.6
8/31/13	8.1
9/30/13	7.9
10/31/13	8.4
11/30/13	8.5
12/31/13	8.6
1/31/14	7.5
2/28/14	8.2
3/31/14	8.3
4/30/14	7.9
5/31/14	8.5
6/30/14	8.2
7/31/14	8
8/31/14	7.8
9/30/14	8.4
10/31/14	8.2
11/30/14	8.6
12/31/14	8.3
1/31/15	8.5
2/28/15	8.6
3/31/15	8.3
4/30/15	8.3
5/31/15	8.3
6/30/15	8.3
7/31/15	8.1
8/31/15	8.2
9/30/15	
10/31/15	
11/30/15	
12/31/15	

00310 BOD, 5-day, 20 deg. C / Location 1 / Season 9 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15		

Limit		
Limit Unit Desc	Pounds per Day	Pounds per Day
Statistical Base	30DA AVG	DAILY MX
Limit Value	3205	10897

## DMR Summary

**Permit NC0000272**

**Version # 0**

**Outfall 001M**

**00310 BOD, 5-day, 20 deg. C / Location 1 / Season 9 / Base**

DMR Values		
8/31/12	1081.7741	1910
9/30/12	1226.1	2169
10/31/12	1279.7096	2028
11/30/12	1670.1666	4167
12/31/12	1054.0967	2269
1/31/13	1075.0645	1537
2/28/13	1059.1428	2389
3/31/13	1334.8387	3675
4/30/13	1148.0666	2512
5/31/13	1383.0967	2743
6/30/13	1082.8333	2057
7/31/13	1191.3225	1691
8/31/13	1009.0967	1378
9/30/13	1126.9666	1922
10/31/13	989.8387	1414
11/30/13	1340.2	2372
12/31/13	1421.1935	3007
1/31/14	2526.4516	7785
2/28/14	2030.9642	2905
3/31/14	1425.4516	2526
4/30/14	1367.9666	6729
5/31/14	1181.7419	1903
6/30/14	1225.5333	1845
7/31/14	1108.9032	1643
8/31/14	1197.7741	2291
9/30/14	1532.1333	3981
10/31/14	878.7741	1513
11/30/14	1593.6666	2335
12/31/14	1182.3548	1985
1/31/15	1372.1935	2678
2/28/15	1646.5714	2449
3/31/15	1238.2258	4179
4/30/15	1032.7	1998
5/31/15	1173.5806	2177
6/30/15	1500.9333	3208
7/31/15	1244.2258	2619
8/31/15	1426.8387	2536
9/30/15		
10/31/15		
11/30/15		
12/31/15		

**00340 Oxygen demand, chem. [high level] [COD] / Location 1 / Season 9 / Base**

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15		

Limit	
Limit Unit Desc	Milligrams per Liter
Statistical Base	DAILY MX
Limit Value	

## DMR Summary

Permit NC0000272

Version # 0

Outfall 001M

00340 Oxygen demand, chem. [high level] [COD] / Location 1 / Season 9 / Base

DMR Values	
8/31/12	113
9/30/12	128
10/31/12	111
11/30/12	165
12/31/12	98
1/31/13	134
2/28/13	102
3/31/13	123
4/30/13	179
5/31/13	164
6/30/13	143
7/31/13	121
8/31/13	108
9/30/13	110
10/31/13	162
11/30/13	137
12/31/13	152
1/31/14	155
2/28/14	125
3/31/14	121
4/30/14	125
5/31/14	114
6/30/14	82
7/31/14	115
8/31/14	136
9/30/14	111
10/31/14	184
11/30/14	139
12/31/14	254
1/31/15	141
2/28/15	130
3/31/15	230
4/30/15	123
5/31/15	109
6/30/15	141
7/31/15	148
8/31/15	174
9/30/15	
10/31/15	
11/30/15	
12/31/15	

00400 pH / Location 1 / Season 9 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15		

Limit		
Limit Unit Desc	Standard Units	Standard Units
Statistical Base	DAILY MN	DAILY MX
Limit Value	6	9

## DMR Summary

Permit NC0000272

Version # 0

Outfall 001M

00400 pH / Location 1 / Season 9 / Base

DMR Values		
8/31/12	7.6	8
9/30/12	7.6	7.9
10/31/12	7.7	8.1
11/30/12	7.7	8.1
12/31/12	7.8	8.1
1/31/13	7.6	8.1
2/28/13	7.7	8
3/31/13	7.7	8.1
4/30/13	7.7	
5/31/13	7.6	8.3
6/30/13	7.9	
7/31/13	7.7	
8/31/13	7.6	
9/30/13	7.5	
10/31/13	7.4	
11/30/13		8
12/31/13	7.4	
1/31/14	7.7	
2/28/14	7.6	8.6
3/31/14	7.5	8.1
4/30/14	7.4	8.7
5/31/14	7.4	8.5
6/30/14	7.2	8
7/31/14	7.3	8
8/31/14	7.6	8.7
9/30/14	7.6	8
10/31/14	7.5	8.1
11/30/14	7.4	8
12/31/14	7.6	8.5
1/31/15	7.6	8.2
2/28/15	7.5	8.1
3/31/15	7.9	8.3
4/30/15	7.8	8.8
5/31/15	7.8	8.2
6/30/15	7.7	8.9
7/31/15	7.4	8.2
8/31/15	7.4	8.1
9/30/15		
10/31/15		
11/30/15		
12/31/15		

00530 Solids, total suspended / Location 1 / Season 9 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15		

Limit		
Limit Unit Desc	Pounds per Day	Pounds per Day
Statistical Base	30DA AVG	DAILY MX
Limit Value	12549	49560

## DMR Summary

Permit NC0000272

Version # 0

Outfall 001M

00530 Solids, total suspended / Location 1 / Season 9 / Base

DMR Values		
8/31/12	2458.5161	4391
9/30/12	2175.6333	3754
10/31/12	3003.7419	8503
11/30/12	3349.2333	9656
12/31/12	2423.129	4541
1/31/13	2601.8709	3752
2/28/13	2023.1071	5508
3/31/13	3241.2903	11438
4/30/13	2557.9666	4027
5/31/13	3051.6129	9030
6/30/13	2780.3333	4892
7/31/13	3322.6774	4942
8/31/13	2256.258	3974
9/30/13	2950.9666	5134
10/31/13	2289.129	3556
11/30/13	3239	6010
12/31/13	2565.7741	4970
1/31/14	3947.3225	13787
2/28/14	3423.1428	5988
3/31/14	2898.8064	3776
4/30/14	2337.3666	7451
5/31/14	2529.6129	5248
6/30/14	2051.7	2939
7/31/14	2896.7741	4318
8/31/14	3095.2903	5168
9/30/14	3145.4333	5262
10/31/14	2113.1935	3218
11/30/14	2654.7666	5480
12/31/14	2356.2903	4435
1/31/15	2829.9677	6428
2/28/15	3710.4285	5771
3/31/15	2755.4838	5298
4/30/15	2891.9333	6310
5/31/15	2353.5161	3504
6/30/15	3173.2333	6618
7/31/15	2580.8064	5562
8/31/15	3101.129	5116
9/30/15		
10/31/15		
11/30/15		
12/31/15		

00600 Nitrogen, total [as N] / Location 1 / Season 9 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15		

Limit	
Limit Unit Desc	Milligrams per Liter
Statistical Base	DAILY MX
Limit Value	

## DMR Summary

Permit NC0000272

Version # 0

Outfall 001M

00600 Nitrogen, total [as N] / Location 1 / Season 9 / Base

DMR Values	
8/31/12	1.3
9/30/12	1.5
10/31/12	.79
11/30/12	.52
12/31/12	1.7
1/31/13	1.3
2/28/13	.41
3/31/13	1.5
4/30/13	2.7
5/31/13	5.3
6/30/13	1.7
7/31/13	4.6
8/31/13	2.4
9/30/13	5.7
10/31/13	1.7
11/30/13	2.4
12/31/13	1.6
1/31/14	1
2/28/14	2.1
3/31/14	1.2
4/30/14	1.5
5/31/14	1.8
6/30/14	1.2
7/31/14	.93
8/31/14	1.7
9/30/14	2.8
10/31/14	1.8
11/30/14	1.2
12/31/14	1.6
1/31/15	1.2
2/28/15	2.3
3/31/15	1.8
4/30/15	3
5/31/15	1.7
6/30/15	2.2
7/31/15	1.7
8/31/15	2
9/30/15	
10/31/15	
11/30/15	
12/31/15	

00610 Nitrogen, ammonia total [as N] / Location 1 / Season 9 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15		

Limit	
Limit Unit Desc	Milligrams per Liter
Statistical Base	DAILY MX
Limit Value	

## DMR Summary

Permit NC0000272

Version # 0

Outfall 001M

00610 Nitrogen, ammonia total [as N] / Location 1 / Season 9 / Base

DMR Values	
8/31/12	.32
9/30/12	.22
10/31/12	.61
11/30/12	.66
12/31/12	.65
1/31/13	2.5
2/28/13	.21
3/31/13	.16
4/30/13	1.6
5/31/13	6.3
6/30/13	1.3
7/31/13	1.6
8/31/13	.72
9/30/13	.97
10/31/13	.28
11/30/13	.57
12/31/13	.27
1/31/14	.25
2/28/14	.24
3/31/14	.19
4/30/14	1.3
5/31/14	.44
6/30/14	.37
7/31/14	.27
8/31/14	1.6
9/30/14	.37
10/31/14	2.2
11/30/14	.2
12/31/14	.18
1/31/15	.27
2/28/15	1.2
3/31/15	.76
4/30/15	.75
5/31/15	2.1
6/30/15	3.2
7/31/15	.27
8/31/15	1.6
9/30/15	
10/31/15	
11/30/15	
12/31/15	

00665 Phosphorus, total [as P] / Location 1 / Season 9 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15		

Limit	
Limit Unit Desc	Milligrams per Liter
Statistical Base	DAILY MX
Limit Value	

## DMR Summary

Permit NC0000272

Version # 0

Outfall 001M

00665 Phosphorus, total [as P] / Location 1 / Season 9 / Base

DMR Values	
8/31/12	1.2
9/30/12	.68
10/31/12	2.1
11/30/12	.41
12/31/12	.97
1/31/13	.59
2/28/13	1.2
3/31/13	.54
4/30/13	.92
5/31/13	.88
6/30/13	.52
7/31/13	.8
8/31/13	1
9/30/13	1.2
10/31/13	.52
11/30/13	.58
12/31/13	.29
1/31/14	.39
2/28/14	.94
3/31/14	.76
4/30/14	.61
5/31/14	.46
6/30/14	.41
7/31/14	.72
8/31/14	.74
9/30/14	.7
10/31/14	.83
11/30/14	.69
12/31/14	.6
1/31/15	.58
2/28/15	.61
3/31/15	.41
4/30/15	1.2
5/31/15	.51
6/30/15	.74
7/31/15	.73
8/31/15	.67
9/30/15	
10/31/15	
11/30/15	
12/31/15	

31616 Coliform, fecal MF, MFC broth, 44.5 C / Location 1 / Season 9 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15		

Limit		
Limit Unit Desc	Number per 100 Mil	Number per 100 Mil
Statistical Base	MO GEOMN	DAILY MX
Limit Value	200	400

## DMR Summary

Permit NC0000272

Version # 0

Outfall 001M

31616 Coliform, fecal MF, MFC broth, 44.5 C / Location 1 / Season 9 / Base

DMR Values		
8/31/12	19.0609	600
9/30/12	1.9679	15
10/31/12	1.7826	6
11/30/12	73.2568	6000
12/31/12	3.4996	5
1/31/13	2.1954	17
2/28/13	2.6591	10
3/31/13	3.7511	11
4/30/13	1.7782	5
5/31/13	41.7137	600
6/30/13	18.3846	68
7/31/13	2.6853	
8/31/13	50.8139	
9/30/13	15.2134	
10/31/13	5.971	
11/30/13		260
12/31/13	80.0648	
1/31/14	43.8939	
2/28/14	94.9163	488
3/31/14	6.0548	14
4/30/14	2.4315	17
5/31/14	8.2354	40
6/30/14	8.7193	600
7/31/14	3.3144	5
8/31/14	1.316	3
9/30/14	3.7976	52
10/31/14	5.5895	88
11/30/14	3.4996	50
12/31/14	11.2549	430
1/31/15	7.6639	230
2/28/15	1.1892	2
3/31/15	2.59	5
4/30/15	2.9136	21
5/31/15	3.08	6
6/30/15	2	4
7/31/15	5.358	92
8/31/15	3.8067	7
9/30/15		
10/31/15		
11/30/15		
12/31/15		

50050 Flow, in conduit or thru treatment plant / Location 1 / Season 9 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15		

Limit	
Limit Unit Desc	Million Gallons per
Statistical Base	30DA AVG
Limit Value	29.9

## DMR Summary

**Permit NC0000272**

**Version # 0**

**Outfall 001M**

**50050 Flow, in conduit or thru treatment plant / Location 1 / Season 9 / Base**

DMR Values	
8/31/12	26.4996
9/30/12	26.2393
10/31/12	27.3767
11/30/12	26.0596
12/31/12	26.9419
1/31/13	27.748
2/28/13	27.2632
3/31/13	27.3406
4/30/13	25.3016
5/31/13	26.2174
6/30/13	27.1406
7/31/13	28.5906
8/31/13	26.26
9/30/13	26.3043
10/31/13	26.4483
11/30/13	26.1056
12/31/13	26.9606
1/31/14	27.5925
2/28/14	27.8746
3/31/14	28.5961
4/30/14	27.2816
5/31/14	27.1856
6/30/14	26.1563
7/31/14	24.8029
8/31/14	25.6454
9/30/14	25.744
10/31/14	26.3222
11/30/14	26.4273
12/31/14	27.6222
1/31/15	27.4758
2/28/15	26.9025
3/31/15	26.9735
4/30/15	28.6186
5/31/15	26.1248
6/30/15	28.0796
7/31/15	28.547
8/31/15	27.4254
9/30/15	
10/31/15	
11/30/15	
12/31/15	

**79855 Adsorbable organic halides [AOX] / Location 1 / Season 9 / Base**

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
7/1/10	6/30/15		

Limit		
Limit Unit Desc	Pounds per Day	Pounds per Day
Statistical Base	30DA AVG	DAILY MX
Limit Value	1556.9	2822.2

## DMR Summary

**Permit NC0000272**

**Version # 0**

**Outfall 001M**

**79855 Adsorbable organic halides [AOX] / Location 1 / Season 9 / Base**

DMR Values		
8/31/12	260.35	294.1
9/30/12	595.6	1540.7
10/31/12	364.58	682.6
11/30/12	302.7	435.4
12/31/12	256.54	332.1
1/31/13	351.25	417.8
2/28/13	358.85	463.2
3/31/13	365.55	427.5
4/30/13	262.3	336.9
5/31/13	227.475	365.5
6/30/13	244.45	284.8
7/31/13	280.2	326.9
8/31/13	275.375	305
9/30/13	262.4	308.8
10/31/13	283.475	305.9
11/30/13	291.825	311.6
12/31/13	323.68	383.1
1/31/14	334.475	467.2
2/28/14	318.625	407.8
3/31/14	363.9	400.8
4/30/14	322.35	364.7
5/31/14	354.4	450.5
6/30/14	277.94	368.4
7/31/14	310.65	377.9
8/31/14	301.05	363.2
9/30/14	304.02	339.5
10/31/14	318.85	532.1
11/30/14	258.2	333.7
12/31/14	Not Received	Not Received
1/31/15	264.575	326.6
2/28/15	403.125	498
3/31/15	284.7	395.9
4/30/15	250.975	284.9
5/31/15	188.125	275.4
6/30/15	249.9	320.5
7/31/15	286.35	349.1
8/31/15	289.875	382.9
9/30/15		
10/31/15		
11/30/15		
12/31/15		

